American Journal of

PUBLIC HEALTH

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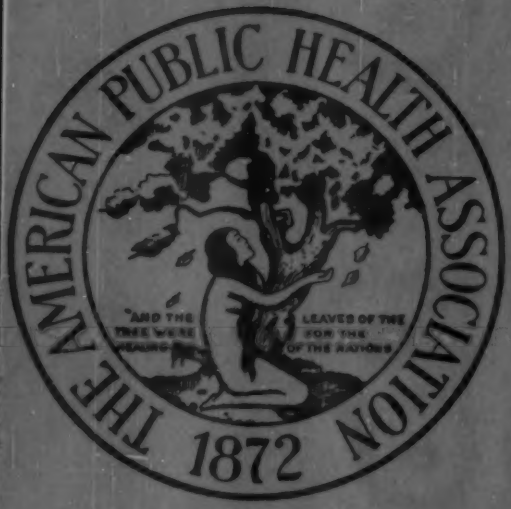

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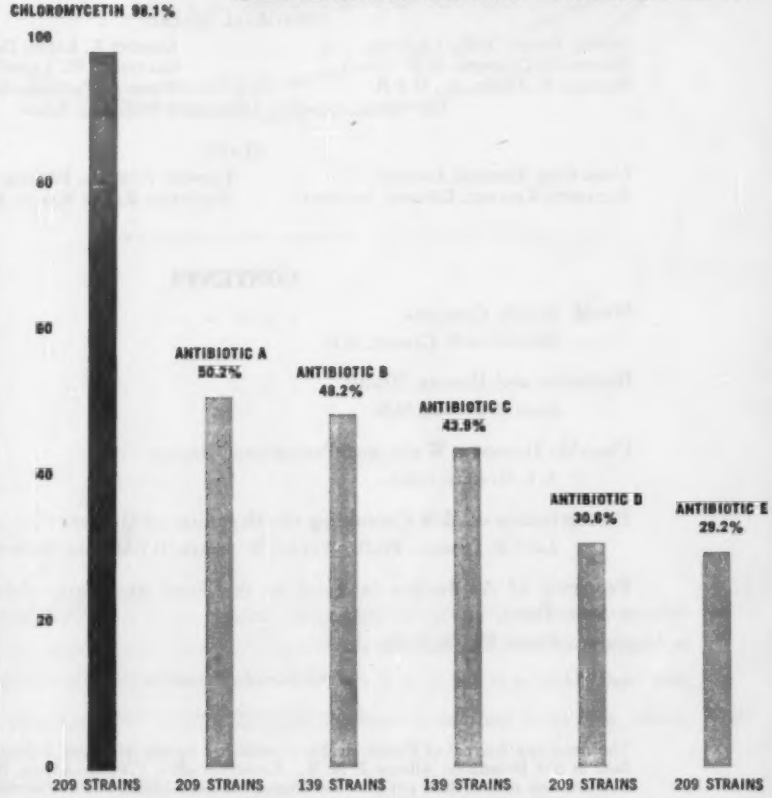

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and the Nation's Health

Official Monthly Publication of the American Public Health Association, Inc.

Volume 47 | June, 1957 | Number 6

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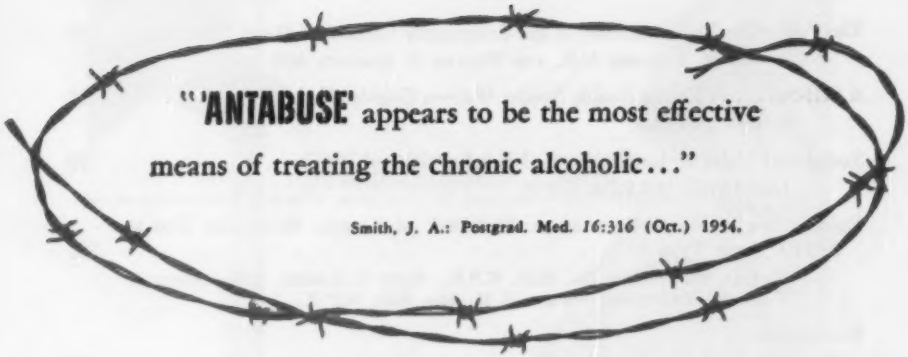

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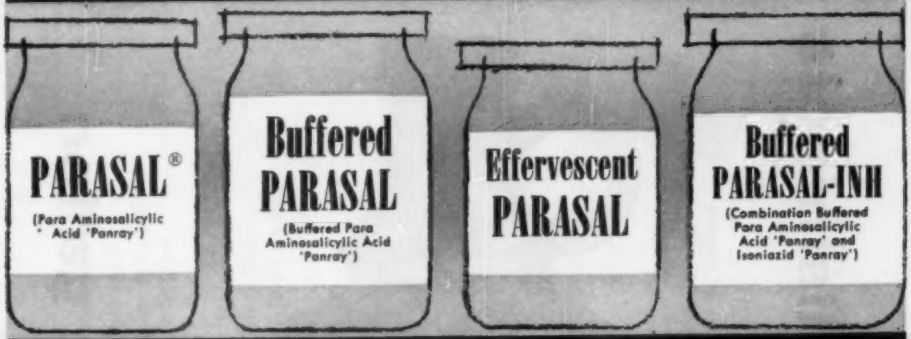

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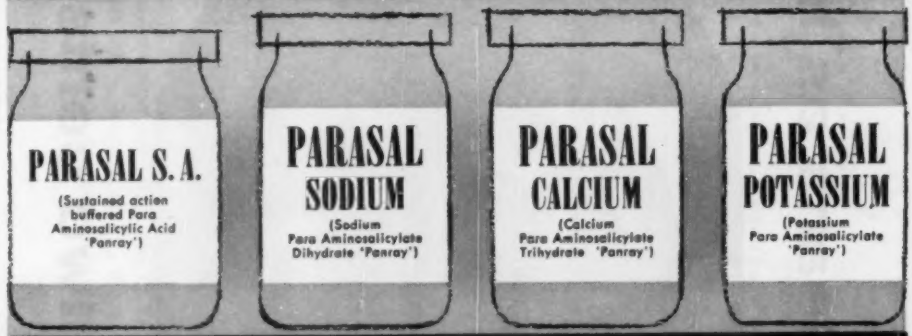

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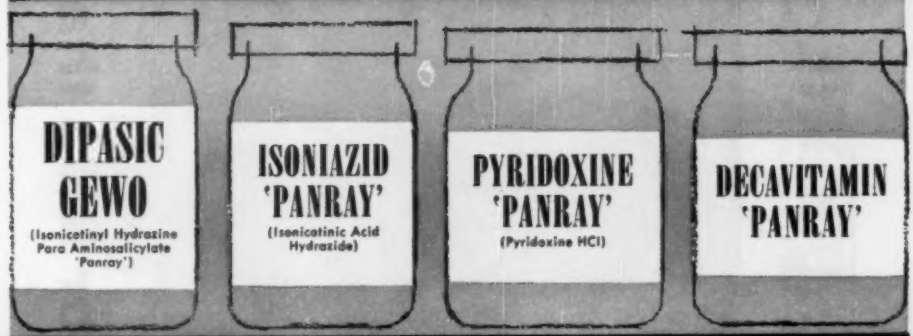

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1. Toverud, K. U.; Stearns, G., and Macy, I. G.: Maternal Nutrition and Child Health. An Interpretative Review, Washington, D.C., National Research Council, National Academy of Sciences, Bull. No. 123, 1950, p. 115.
2. Proudfit, F. T., and Robinson, C. H.: Nutrition and Diet Therapy, ed. 11, New York, The Macmillan Company, 1955, p. 271.
3. Martin, E. A.: Roberts' Nutrition Work with Children, Chicago, The University of Chicago Press, 1954, pp. 231-236.

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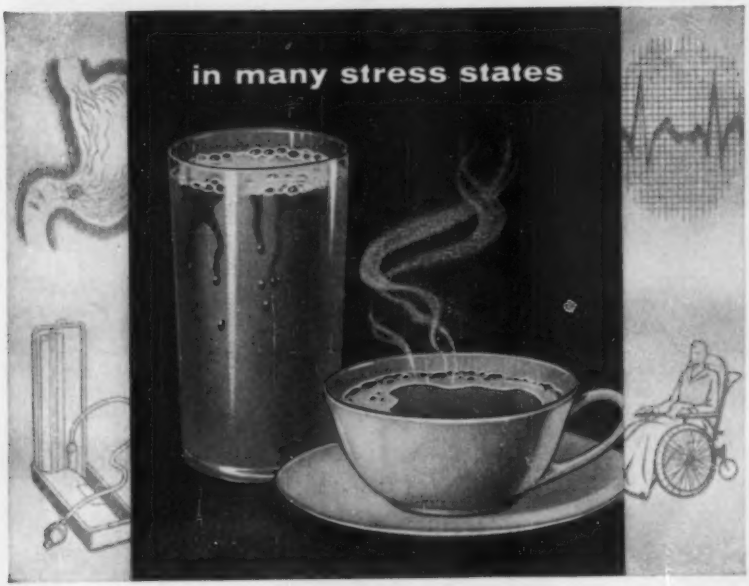

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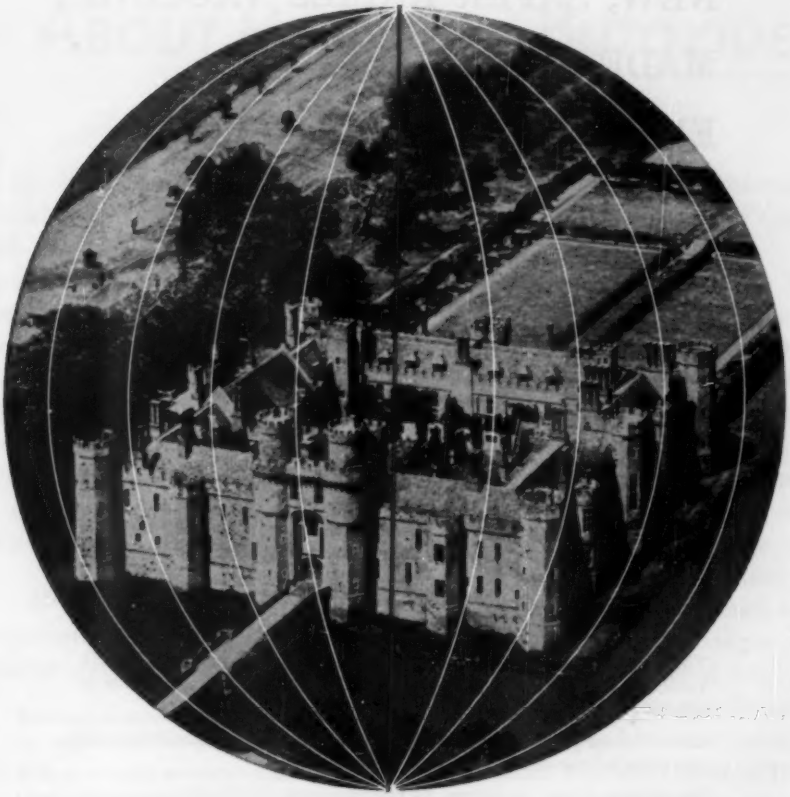

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1. J. Lab. & Clin. Med., *45*:679, 1955.
2. Bull. World Health Organ., *10*:823, 1954.

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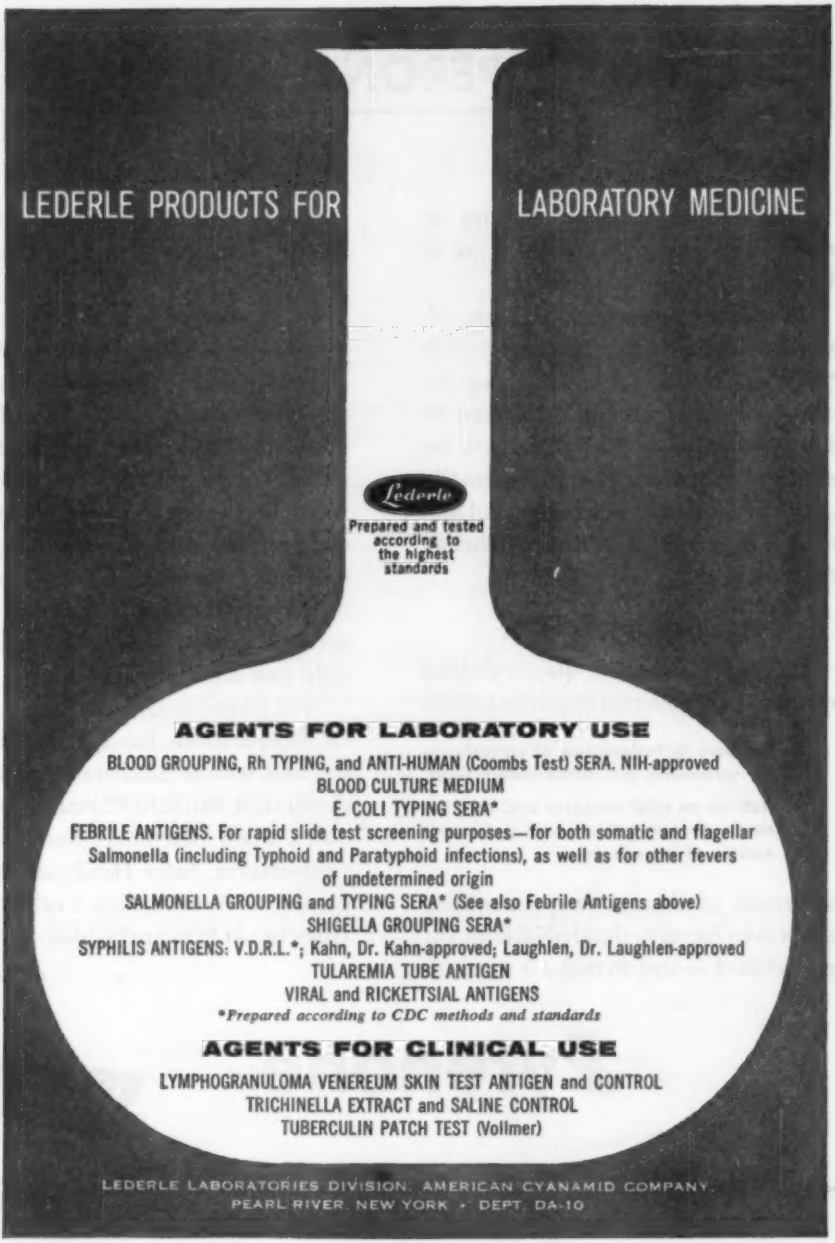
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INSIDE SCIENCE

THE VITAL STORY OF

Breakfast Cereals

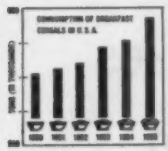
with essential vitamins and minerals restored

by Science Writer

New Edition

AMERICA LIKES BREAKFAST FOODS

Let no one doubt the popularity of breakfast cereals among Americans. The chart below traces the consumption of these fine foods between 1950 and 1955. During that period annual consumption rose by *76,000 tons*. In just one year, 1955, Americans ate 2½ lbs. of hot and 4.8 lbs. of cold cereals per person!



Why are breakfast cereals so well-liked? They are tasty; they are easily served; they appeal to busy homemakers, as well as institutional dietitians, because they are readily available in a variety of flavors at a modest cost. They add interest and value to an important but sometimes neglected meal --breakfast. Their use is extending to between-meal and party snacks, too.

Many grains are processed to make breakfast cereals: wheat, corn, oats, rice. Eaten with fruit and milk or light cream, they contribute an excellent combination of basic, flavorful, nutritious foods to the diet.

Better Foods for Better Health Through Restoration

The science of nutrition has advanced rapidly. In the manufacturing process of some cereals, some of the essential "B" vitamins and minerals are subject to some loss, just as with other foods.

These losses are inescapable when such grains are prepared for human use. When this became known, manufacturers acted to overcome the losses. They adopted restoration.

Restoration simply means that certain important vitamins and minerals are restored to the cereal food during processing, so that the vitamin and mineral values in the finished product are generally equal to the whole grain values of those elements. Wheat, corn and rice products are customarily so treated. Vitamins B_1 (thiamine), B_2 (riboflavin), niacin (another "B" vitamin), and the mineral, iron, are those most widely restored. Vitamins C and D are also sometimes added.

Pre-sweetened cold cereals emphasize the nutritional importance of added vitamins. Increased calories require more "B" vitamins for best utilization of the food.

Why the Vitamins are Important

Physicians and diet experts have proved that vitamins are essential to prevent certain deficiency diseases and to contribute to robust good health.

Vitamin B_1 (thiamine) helps build and maintain physical and mental health. It is essential for normal appetite, intestinal activity, and sound nerves. A lack of this vitamin leads to beriberi, a rarity in the U. S. A., but still a very serious health problem in other parts of the world.

Vitamin B_2 (riboflavin) is essential for growth. It helps to keep body tissues healthy and to maintain proper function of the eyes.

Niacin is needed for healthy body tissues. Its use in the American diet has been largely responsible for the virtual disappearance of pellagra, a serious disease.

Vitamin D helps children develop normal teeth and bones. It prevents the development of certain abnormal bone conditions in adults.

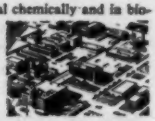
Iron is essential for making good red blood and for the prevention of nutritional anemia.

Where Do the Vitamins Come From?

At about the same time that processing losses in breakfast cereals became known, other developments in the scientific world made available ample supplies of vitamins at economical prices. Thus, the nutritional contribution of some breakfast cereals could be, and was, greatly improved through restoration.

Since the early days of breakfast food restoration and of white flour and white bread enrichment, the world-famous firm of Hoffmann-La Roche has supplied top quality vitamins *by the tons*. Pioneering work in its laboratories and by its collaborators resulted in the "duplication" of some of nature's extremely complex substances. First, the chemical composition of the vitamin was learned. Second, the pure substance was isolated. Third, the "duplicate" was made by synthesis. And fourth, the laboratory techniques were extended to large scale commercial operations.

The manufactured "duplicate" is identical chemically and in biological activity with nature's own product. A vitamin is still a vitamin regardless of whether nature or man made it. So efficient is large-scale manufacturing, that vitamins are sold at a lower cost than if they were extracted from natural sources.



This article is one of a series devoted to the story of vitamin enriched or restored cereal products: white flour, white bread and rolls, corn meal and grits, macaroni products, white rice, breakfast cereals, farina. Reprints of this article, of any other in the series, or of all are available without charge. Please send your request to the Vitamin Division, Hoffmann-La Roche Inc., Nutley 10, New Jersey. In Canada, Hoffmann-La Roche Ltd., 286 St. Paul Street, West; Montreal, Quebec.

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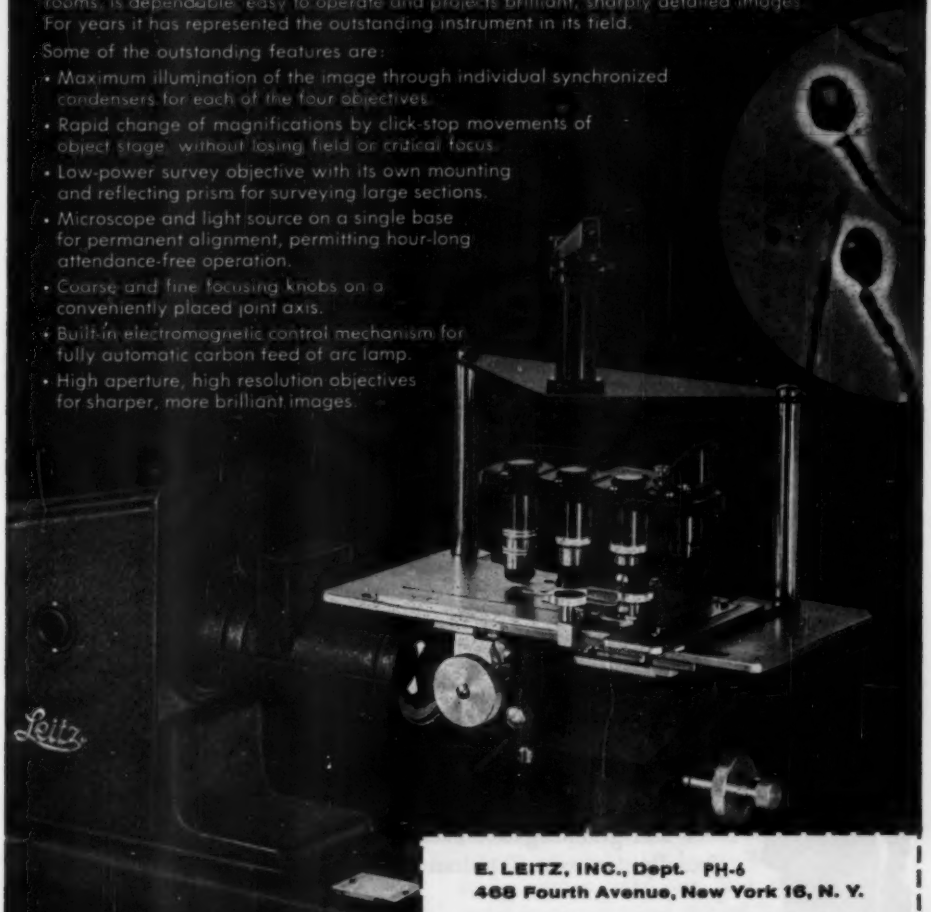

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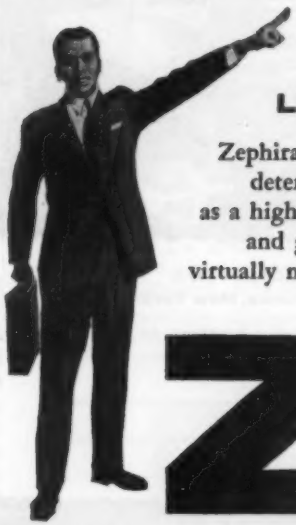

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and the Nation's Health

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Volume 47 June, 1957 Number 6

World Health Catalysts

MARCOLINO G. CANDAU, M.D., F.A.P.H.A.

We hold it a privilege to further through the publication of this luncheon address the cause of the National Citizens Committee for the World Health Organization. Something of the sweep and indominatable energy that animates the entire concept of WHO becomes evident in this brief report upon only a few of its recent enterprises.

It is a great pleasure to me to find myself once more among you and to report further to you—not only as shareholders in the World Health Organization but as its active and energetic supporters—on some aspects of its work.

I thought, when I was speaking to you two years ago, what a pity it was that I could not invite you all to come to Geneva and see, for example, the World Health Assembly in action, to hear the delegates from many countries throughout the world speaking, not only of their people's hopes and aspirations but of the practical measures by which these could be realized through the work of this great cooperative for health. Since then some few among you have had such an opportunity—at the World Health Assembly held in 1955 in Mexico City.

Quite soon that opportunity might be available to most of you here today as there is a possibility that in 1958 the World Health Assembly will be held in your country. If this possibility becomes a reality, the people of the United States would have an excellent chance to see at work the organization which they have so long and so whole-heartedly supported. This would also afford the National Citizens Committee a first-rate opportunity of spreading even wider in this vast country the knowledge of our activities.

When preparing notes for this speech, I wondered if it would be possible to present to you, in regard to one or more countries, a picture of health conditions in what we might call the pre-WHO era, the conditions obtaining after the national government had availed itself for

Dr. Candau is director-general, World Health Organization, Geneva, Switzerland.

This paper was presented before the National Citizens Committee for the World Health Organization at the Eighty-Fourth Annual Meeting of the American Public Health Association in Atlantic City, N. J., November 14, 1956.

some years of assistance from WHO and other international organizations and, finally, an idea of the future direction their health developments would take.

Fortunately, I was able to find a report presented last year to the people of India by their minister of health, Rajkumari Amrit Kaur, who spoke to this committee two years ago in Buffalo. Here are a few revealing figures on some of the health problems India has been struggling with for centuries. Malaria used to claim as its victims almost one quarter of the entire population. Rather modest demonstration projects started in the late forties with assistance from international sources, including WHO, led to a nation-wide campaign which is intended to cover eventually the entire population exposed to this disease—about 200 million people. By 1954 this campaign had been steadily in progress bringing within its scope during those two years 75 million people. Incidentally, information available to us shows that in 1956 its scope was already extended to cover 160 million people. In future years, India's second five-year plan foresees an increase of the antimalaria work, which will give protection to the entire population exposed to this disease. Here it is interesting to note that the total loss caused by malaria has recently been estimated as 500 million dollars a year, while the cost of the total malaria eradication program all over India would be less than 200 million dollars.

In 1946 it was estimated that there were in India two and a half million active tuberculosis cases of which nearly a half million died every year, most of them in the prime of their lives. Eight years later as the result of a mass BCG campaign—the biggest campaign of its kind carried out by any country in the world—56 million people had been tested and 18 million children and young people vaccinated. It is hoped by the end of India's second five-year plan the entire population exposed to tuberculosis will be given some measure of protection.

Similar progress can be recorded in another important field—the education and training of professional and auxiliary health personnel. The usefulness of this program for India can be measured by the fact that in 1946 there was one doctor to 30,000 people in towns and cities and one doctor to 75,000 people in rural areas. By 1954 the picture of medical education and the prospects of recruiting doctors and other kinds of health personnel looked much brighter, indeed against 16 medical colleges in 1946 there were 34 eight years later. The number of students increased from 1,800 to 3,000. Instead of about 1,000 nurses a year the number trained was 1,650. The number of midwives trained each year went up from 760 to 1,750. The second five-year plan envisages the establishment of ten more medical colleges and the expansion of others. Four thousand nurses, instead of 3,000, will be trained each year with a corresponding expansion in the training of all types of health personnel.

In India, as in other countries, WHO's work can be compared to that of a catalyst. We provide the teams of health personnel who, working on projects, pass on to their national counterparts the skill and knowledge needed to attack a specific health problem. After a certain time, national personnel take over completely the responsibility for the project and become in turn the nucleus for teaching and demonstration for the rest of the country. Let me now show in more detail how the process of communicating experience and knowledge works in another country, Afghanistan.

Afghanistan is a land with great natural resources and a hard-working population estimated at 12 million. One of its most important public health problems was until very recently malaria. While it affected fewer than a million

people, it struck the potentially richest areas which could not be developed because of the ravages of the disease. In the middle of 1949, WHO sent to Afghanistan, at the request of the government, an expert experienced in malaria work. A survey was carried out and a control demonstration project set up in a rice-growing area not far from the Khyber Pass. During the following year demonstration work, for which UNICEF had generously provided supplies and equipment, was extended to other areas. Today, a WHO advisory team is helping the government to plan the final stages of a nation-wide eradication campaign and it is hoped that by 1960 there will be no malaria in the country. It is interesting to note that the total cost of operations for 1952 through 1959, including government and UNICEF contributions, is estimated to be less than three-quarters of a million dollars compared with the previous annual cost of malaria to the country which was estimated to be 20 million dollars.

Stories of WHO's assistance to countries in the field of malaria can be repeated many times and it is encouraging to see the tremendous dividends paid by the comparatively small amount of money invested in it by the Organization. Five years ago any plan for the eradication of malaria in countries and over continents would have been considered vague, insubstantial, and quite unrealistic. Today, however, the cumulative results of research, demonstration and field programs have worked a transformation and any such plan is entirely realistic with a quite achievable objective. The catalytic effect of WHO's assistance given to research activities, while less conspicuous and less dramatic than that to actual demonstration projects, is nevertheless significant for the promotion of better health throughout the world. Let me give you a few examples.

Despite the fact that the means for the eradication of smallpox exists, a quarter of the world's population, it has been estimated, lives in or near areas where the disease continues to be prevalent. A major factor in the failure to control smallpox is rapid deterioration of the usual vaccine in hot countries. Therefore in 1952 WHO initiated a series of studies in which laboratories in the United States, England, France, Denmark, Austria, and Indonesia cooperated to determine whether a sufficiently stable dried vaccine existed or could be developed. The results showed that some of the dried vaccines in current use were little more stable than ordinary lymph, although one showed good stability. Meanwhile, however, one of the participating laboratories had been developing a new dry vaccine. I do not know whether this research would have been undertaken in any event without the stimulus of WHO's program; but the latter certainly had the effect of causing the work to be accelerated so that the vaccine was ready in time to be included in the second series of trials initiated by WHO.

As things turned out, this was indeed fortunate since the new vaccine proved outstandingly stable: the test batch is still giving 100 per cent successful vaccinations after 18 months' exposure at 45°C, whereas most dried vaccines are useless after one or two weeks' exposure. These trials produced another valuable result: for the first time we had a vaccine sufficiently stable to justify the establishment of an international standard vaccine. This was accepted by the WHO Biological Standardization Committee a few weeks ago. Stimulated by these findings, widespread eradication programs based on the use of dried vaccine are under way particularly in Latin America. The cost to WHO of the studies I mentioned has been only about $4,000 yearly since 1952, while the annual cost of the disease in sickness

and in death as well as quarantine services in all countries, including those in which smallpox is no longer a health hazard, must run into hundreds of millions of dollars. The study of the vaccines is a cardinal factor in our fight against communicable diseases. Whether they have, like the typhoid vaccine, been in use for more than a half a century, or whether they have been newly developed, like the poliomyelitis vaccine, there is a problem common to them all, the importance of which has been realized only in recent years. It is well known that all vaccines must be tested in the laboratory to insure their potency; but the relationship between the results of these potency tests and the protection afforded to man must be established if the former are to have any real meaning. In most instances the only way to do this is by means of a strictly controlled field trial in man. Field trials can obviously only be carried out where the disease in question is prevalent, which is often only in the less developed countries. Vaccines, on the other hand, are generally produced in highly specialized laboratories in the more advanced countries where the disease may be rare. This is clearly another case for international cooperation.

In addition to the smallpox studies, WHO is actively participating in research on a number of vaccines necessary not only for the control of a given disease in a particular country but also for the protection of those whose travel is so essential to the economy and peaceful development of the world. For instance, the Yugoslav trials supported by WHO and the U. S. Public Health Service have shown that our conception of typhoid vaccines previously accepted as firmly established must be reconsidered and that further field tests are needed. These tests will be of considerable importance to the countries where typhoid remains a problem and which, because of the cost involved in improving environmental sanitation, are forced to vaccination as a first line of defense. Here again a small investment on the part of WHO is expected to yield important returns in the fight against one of the perennial scourges of mankind.

I would like to say a few words about the type of research activities of direct interest to this country. Following accidents during the early stages of poliomyelitis vaccination, there was widespread confusion about and even suspicion of the vaccine. When there had been time to carry out the essential investigations, WHO brought together the leading experts from a number of countries to consider the facts. Their report was disseminated very rapidly. It enabled health authorities, free of the emotional pressure which had until then been considerable, to evaluate the situation and as a result many of these authorities decided to bring the vaccine into use as soon as possible. Shortage of the vaccine is still a major problem but the huge productive capacity of the United States and favorable development in other countries such as Australia with its big Commonwealth Serum Laboratories, which I was fortunate enough to visit recently, will undoubtedly help overcome it.

Other problems remain to be solved. The vaccine is expensive, difficult to prepare and to test, it is not apparently 100 per cent effective, and the infection cannot be eradicated by its use. The duration of immunity is as yet unknown and there are many uncertainties regarding its application under the different conditions pertaining in many parts of the world. WHO will therefore continue to give what stimulus it can to research work on all these important questions.

A great number of countries however have no laboratories capable of undertaking serologic surveys and studies of prevalent viruses, especially those causing diseases in vaccinated persons.

WHO's contribution to these problems will be to help train virologists and to organize and support a network of laboratories competent to carry out essential studies for countries at present unable to help themselves.

The result of all this work must be of value to the world as a whole. Indeed, even though effective vaccines exist, studies are needed of the dangers to which travelers may be exposed and a watch must be kept on the possible emergence and spread of viruses against which the existing vaccines might be ineffective. This may not happen; but we must remain alert.

It is interesting to note that the stimulating effect of the need to study poliomyelitis in many countries with a view to the application of control measures has resulted in a greatly increased interest in virology and virus diseases in general, which cannot fail to be of great value to public health. You may also be interested to know that the total expenditure in grants by WHO in the field of poliomyelitis in the last three years was $41,000.

An important matter is the WHO role in the stimulation of research in resistance of insects to insecticides. The WHO Expert Committee on Insecticides, which met in July of this year, agreed that resistance to chlorinated hydrocarbon insecticides is now present in ten important disease vectors and that there is evidence of resistance in 27 other species of public health importance.

Of particular interest are the studies of the resistance of the body louse, the vector of typhus and of relapsing fever. The lack of efficacy of DDT in the control of typhus, noticed at the beginning of 1951 in prisoner-of-war camps in Korea, was promptly confirmed by test as a case of strong physiologic resistance of the louse. A similar situation was found to exist in Tokyo. Lice collected in Cairo in 1952 were found to have an intermediate degree of resistance, which was also reported in 1954 from two provinces in Egypt. In 1953 the World Health Organization set up a standard test method to ascertain resistance in lice and distributed material for it. Up until this year 51 national health administrations have agreed to participate. Studies carried out in 37 countries have shown very interesting results. For example, high resistance has been shown in Japan, Hong Kong, and South Africa; intermediate resistance in Chile and Turkey; and intermediate to high resistance in Iran, Syria, Jordan, Ethiopia, Sudan, Senegal, French Guinea, Nigeria, and Peru. Again it is interesting to note that the amount WHO invested by means of grants from 1953 to 1956 in studies on insecticides, including those on resistance, was $13,000.

Since time is limited, I can touch only briefly on the assistance WHO is giving to countries in order to stimulate and encourage the development of mental health programs. There is no need in this country to underline the importance of the mental factor in the improvement of health. You are well aware of the fact that today half the total hospital accommodation in the United States is occupied by mental patients. You all know that the steady lengthening of the human life span makes it necessary to care for a growing number of persons with psychiatric disorders associated with old age. Furthermore, there are many indications that psychoneurotic and psychosomatic complaints have become more frequent, as changes in social conditions make a harmonious adjustment of the personality increasingly difficult. We now have also to concern ourselves with possible new problems resulting from automation.

WHO's short-term consultants have been assisting in the creation of national mental health services in several countries, which are in the process of developing their economic potentialities, with the result that their social structure

is being modified. Another stream of assistance flows in the opposite direction and gives mental health workers from the so-called underdeveloped countries an opportunity to study the technics and institutions developed in countries like the United States.

Special attention is paid by WHO to the development of child psychology and to child guidance. It had in recent years, for instance, four meetings of a study group on the psychobiological development of the child. This was attended by a number of eminent specialists in widely different fields and the work done by this group has been described as one of real cross-fertilization of ideas which is of the utmost importance in these days of increasingly intensive specialization. Thus what WHO is doing in the field of mental health again is exercising a catalytic effect. In a period such as ours, characterized by far-reaching technologic changes, emotional strain and psychologic difficulties, WHO's work under this heading can surely be regarded as a significant contribution.

Foremost among the technologic changes of our time is of course the peaceful use of atomic energy which, following the initiative taken by the President of the United States, has now become a joint undertaking of all nations. Within the limits of the means available to it, the World Health Organization must assume its normal constitutional responsibilities both for the dissemination of information and for encouraging and coordinating research on some of the important health problems raised by the utilization of this new source of power. These problems have spread beyond the confines of industrial medicine to become a part of public health.

The public must be protected from possible radiation hazards and this raises the immediate question of the proper disposal of radioactive waste with particular emphasis on safeguarding the purity of water and of food supplies. Much work too is still needed on the use of radioisotopes in the diagnosis and treatment of disease. Finally, as it was pointed out during the Geneva Conference last year, since the ambient radiation level is bound to be considerably raised by artificial means, there is a need for a study of the somatic and genetic effects this intensification of background radiation is likely to have on mankind, as soon as a large proportion of the world's population is exposed to it. All this means increased responsibility for the Organization whose role is to act as leader and coordinator of international health work.

The possible social and psychologic impact of the peaceful uses of atomic energy cannot be ignored. Many people might be entertaining unreasonable fears and anxieties arising out of, for instance, the proximity of reactors in their neighborhood or wondering about the safe disposal of their radioactive waste. Others, on the other hand, might be lulling themselves into a false security by accepting these new developments without questioning for themselves their possible adverse effects. These have been a few examples to show how international assistance, provided in small quantities, can produce important results through the stimulating effect it has on national activities. You may wonder about the resources in manpower and in money WHO is mobilizing for the tasks it has to carry out. Let me come back to India. The total manpower deployed by WHO in the Regional Office for Southeast Asia and in the field is less than 120 people all told, and they have to cover six other countries besides India. In fact, the number of people employed by the entire Organization at its headquarters in Geneva, at its six regional offices, and in the many countries in which it is helping in more than 500 health projects, is not more

than 1,500. Of these, well over a third are secretarial and clerical staff, for the most part recruited locally.

The World Health Organization, you can see, is very small compared with what results from its presence. One of the reasons for such results is that the countries that are benefiting from international assistance are making a real effort to increase their financial means for health work. To give a concrete example, Ceylon has increased its health expenditure by no less than 500 per cent during the last 12 years and is in fact spending over 12 per cent of its national budget on health. In more general terms, in 1956 for instance, WHO from its regular and technical assistance budgets spent around nine million dollars on field activities. In the same year the contributions of national governments toward the carrying out of these activities amounted to approximately 54 million dollars—that is to say six dollars for every one of ours. This is quite apart from their annual contribution to WHO.

What I have said answers, I hope, effectively a frequent criticism of international work to the effect that aid is given to countries free of charge and obligations. This of course is a gross error, especially in the case of WHO, since agreements with governments on health projects always provide for the employment of nationals alongside international teams to insure, after the withdrawal of WHO workers, the continuation of health programs, which is also a provision of our agreements.

Another objection to international aid, closely connected with the one I have just mentioned, is that the more that is done to help countries—and by this one usually means the so-called underdeveloped countries—the less these countries do for themselves. Such an allegation is of course entirely erroneous, at least as far as WHO's assistance is concerned, since, as we have seen, the countries, and very poor countries at that, dig deep enough into their pockets to match our dollar's worth of help and advice with six dollars' worth of work for the health of their people. Moreover, the same countries are increasing their own efforts, expanding their own health work, after international aid has shown the way.

The fact is that these countries fully realize the value of health and are determined that their people shall enjoy it in the fullest measure. That realization and that determination now animating nations throughout the world is the most encouraging proof of the World Health Organization's catalytic action.

Radiation and Human Health

JOHN C. BUGHER, M.D.

For only three of the several stimulating addresses spread before the World Health Organization Forum Session can space be found in this Journal. It seems logical to select, for the second offering, one that balances—by its rather disturbing overtones—the heartening report of WHO successes. The third paper will follow in July.

The atomic energy industry is a mere fledgling that virtually has emerged only during the past decade. Notwithstanding the youth of this era, human society is even now involved in changes of such magnitude that only the historians of the next century will be able adequately to describe the full impact of this completely new form of energy. Already the use of nuclear radiation is widely employed in chemical industries, in manufacturing and process control, in both medical diagnosis and treatment, and in many other phases of our society. As the basis for the present discussion we shall take one of the major applications of nuclear energy to human needs, that of atomic power.

To appreciate the magnitude of the movement now under way, consider for a moment the predictable growth of the world-wide power demand in relation to the known resources of a non-nuclear nature. At the Geneva Conference on the Peacetime Uses of Atomic Energy an analysis of these matters was presented. Expressed in terms of the energy of coal, it is estimated [1] that the 1952 world requirements of fuel and power were equivalent to 3.6 billion tons of coal equivalent. From the experience in power development of the past century it is predicted that by the year 2000 the total fuel and power demand will be equivalent to 20 billion tons of coal. Considering the pace of industrial development and the potential which nuclear power possesses for countries not possessed of resources in fossil fuels, these estimates are probably understatements.

In comparison, recent studies [2] of the resources of coal and oil in various parts of the world, but especially with reference to the United States, have disclosed that the exhaustion of the economically recoverable resources of these fuels is already in sight. Within the next decade the peak of production of oil in the United States will probably have passed and an irreversible decline of production will take place. The decline in coal output due to depletion of the reserves will probably not ensue until a decade later. Consequently, it seems apparent that while the reserves of fossil fuels are sufficient for the lifetimes of the thermal plants now in existence, the great growth in power output must inevitably come from this new source of energy—that obtained from the atomic nucleus.

In a technology characterized by such rapid development, and affected so profoundly by advances in scientific knowledge, it is clearly unwise for even the most competent engineers to attempt precise predictions. We are informed, however, that the foreseeable period in power development will be based upon the energy released by the fissioning of heavy atoms, particularly those of uranium-235 and plutonium. The utilization of energy produced by the fusion of light elements lies in an unknown span of time in the future. In contrast, the rate of development of technology in the utilization of fission energy has been very great and may be expected to con-

tinue. Increasing efficiencies should be associated with decreasing capital outlays for units of power. In all probability most of the new power installations to be built over the next few decades will be of nuclear character.

Nuclear fission is accompanied not only by high levels of immediate radiation but also by the production of a great number of radioactive isotopes, each with its own characteristic radiation energy and radioactive life. The radiations emitted are of several kinds, differing both in character and energy. The health concern arises from the fact that energy in these forms may be delivered from a distance, traversing a vacuum or penetrating materials ordinarily considered opaque to toxic substances. The nature of the biologic effects of these radiations and the means of controlling exposure become of primary concern to the public health official for the decades that lie ahead.

How does nuclear radiation exert its effect on living cells? While there are several different physical forms of nuclear radiation, they all have similar biologic effects, so that we may speak of various aspects of health with respect to radiation without becoming involved too deeply in the physical description of the radiations themselves. It appears that the chief mechanism of injury to living cells is through the ionization of water, of which all living tissues are largely composed. In a very real sense man is an aquatic animal. He not only is composed mostly of water, but he lives and continues to exist in an aqueous state, being dependent on foodstuffs which are themselves mostly water. Radiation appears, therefore, to strike at life through the medium of its most basic substance—water.

In the interaction of ionizing radiation with water several peculiarly toxic compounds are produced, which in turn have chemical effects upon the constituents of a living cell but especially upon the proteins. Furthermore, there are secondary mechanisms involving the alteration of the protein molecules through rupture of chemical bonds directly. If a sufficient number of such changes occur, the protein is denatured and is irretrievably lost to the life functions of the cells. Chemical changes of similar character occur in the fats and related chemical substances essential to life.

From the foregoing brief and superficial statement of the mode of action of ionizing radiation on living cells it is apparent that all these effects are retrogressive in character, leading to the biologic handicap of the cells in which the changes occur. This leads in turn to the general statement that radiation exposure of any kind is biologically undesirable as far as the normal cell is concerned. Even in the use of x-ray in the treatment of cancer, the radiologist makes a carefully considered choice between the desirability of causing the greatest possible damage to the cancer cells and the necessity of minimizing the injury to the normal tissues.

It is well established that the injury resulting from appreciable radiation exposure has two components.[3] One of these is transient in character and, assuming that the injury has not been sufficient to cause death, will eventually permit complete recovery. The second component is one of permanent injury. The acute illness from large exposures in a short time is self-limiting in the amount of permanent injury. It is at once evident that such an exposure cannot be carried beyond the point of fatality as far as our interest in the perma-

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nent injury is concerned. Severe acute illness from heavy exposures points clearly to the circumstances of the exposure and the mode of prevention. It is the long-continued exposure of low intensity which may gradually build up far more permanent cumulative injury than is possible from a single severe exposure. The health considerations of radiation exposure thus have to do with the problems of continued low-level radiation without acute illness. If the long-term problem is properly solved, then there should exist no difficulty in dealing with the circumstances which might lead to acute injury.

In considering the biologic effects of radiation there are differences depending on the nature and the energy of the radiation. Gamma radiation, which resembles highly energetic x-rays, is capable of deep penetration into tissues and of traversing appreciable thickness of material. In striking contrast, alpha radiation, even though possessed of considerable energy, is incapable of deep penetration and in fact has little import as long as the substance emitting such radiation remains outside the body. Between these two extremes with respect to penetration are to be found various energy levels of beta radiation which have appreciable penetrating power in tissue although limited in depth of effective action. Further, one finds that whole body exposure to radiation is appreciably different from the irradiation of a single part. The tolerance of the entire individual to radiation is much less than that exhibited by any single organ or component of the body.

In the light of these general considerations one may consider two broad classes of biologic effects. The first of these has to do with the effects on the individual himself. These may be spoken of as the somatic effects in contrast to those which are manifest only in the children or grandchildren of the individual exposed. This second class is the genetic effect and results from the action of radiation on the germ cells of either the male or female. These matters have been most thoroughly reviewed by the comprehensive study on radiation injury conducted by the National Academy of Sciences.[4]

Somatically, certain types of disease tend to be associated with excessive radiation exposure. Among these are to be especially noted: leukemia—which is a cancer of the bone marrow or the blood-forming tissues—and increased frequency of carcinoma or sarcoma, the latter especially arising in the skeletons of individuals who have acquired excessive amounts of radioactive materials with special affinity for bone. A very important general manifestation with no specific pattern of disease is decreased life span, which is found to be quantitatively related to the total amount of radiation exposure.[3] The measure of this effect is an increased rate of general aging. The exposed population simply grows older at a rate greater than that of the normal for that population. Evidence is accumulating that this is probably the most sensitive indication of population injury that is available and it is probable that studies of whole populations will demonstrate changes which would be imperceptible on the basis of individual observation. Much remains to be learned, but from animal studies, as well as careful observation of human experience both in the United States and Japan, it appears that 100 roentgens of gamma radiation to the whole body may shorten life expectancy by an amount between half a year and two years. Similar proportionate shortening of life span appears to exist for many experimental animals as well.

In considering the question of genetic effects certain general scientific principles have been well established. It is known that gamma radiation to the germ cells is effective in producing those alterations in genetic characteristics

called mutations. These are characteristics not previously present in that particular line of inheritance. A second important general conclusion is that for purposes of genetic analysis the effect depends upon the total dose and is not importantly determined by the rate at which the radiation has been delivered. A third generality is that within the range of actual experimentation the frequency of mutations is approximately proportional to the amount of radiation.

The mutations produced may lead to serious abnormality in some cases or to trivial departures from the normal in others. In general these departures from normality are not beneficial to the individual and many of them are seriously detrimental. Most modern geneticists look with concern on any appreciable increase in the frequency of mutations in man. Not enough is as yet known of human mutation frequency or the susceptibility to mutational change induced by radiation in the human species. Because of this area of ignorance there is general agreement among geneticists that radiation exposure should be kept to the lowest possible amount, although there is appreciable disagreement concerning the quantitative aspects of the ultimate effect upon the population.

With respect to all of these biologic effects, both somatic and genetic, it is a good working principle that as the fraction of the total population exposed increases there should be a diminution in the maximum amount of individual exposure permitted. Frequencies of injury that might cause little concern if they applied to small groups of people may be deserving of the most serious attention when large populations are involved. Thus, the standards for permissible exposure need to be more stringent when large blocks of population are irradiated than where the exposure is limited to a comparatively small number of persons.

To appreciate the magnitudes involved, it is helpful to consider the character of our present radioactive environment. The world is radioactive and will always remain so. In the earth's crust are found large amounts of uranium, thorium, and actinium, and their related elements. There is no portion of the earth's surface free from the radiation produced spontaneously by these materials. Natural potassium has a radioactive isotope, potassium-40, the activity of which is appreciable. All natural potassium, whether in the earth's crust or as a component of living individuals, is thus radioactive and produces an appreciable increment in the total dose to which people are exposed. Likewise, the carbon which forms such a large part of our bodies has a constant fraction composed of the radioactive isotope of carbon of mass 14. This carbon is originally produced by the action of cosmic rays on the nitrogen of the atmosphere.

Cosmic radiation is that coming from outside the earth, much of it from outside the solar system. Exceedingly energetic radiations are thus received from outer space and all living things on earth are constantly bombarded by this celestial radiation. At high altitudes the amount of cosmic radiation is appreciably increased, being approximately double, at an altitude of 5,000 feet, that experienced at the level of the sea. From all these natural sources of radioactivity individuals may receive a total exposure in a lifetime of the order of 10 roentgens equivalent.

In recent years there has been a man-made component added to the general exposure from natural sources of radioactivity. . The sequence of nuclear detonations conducted in the course of the development of atomic weapons has resulted in the addition of substantial amounts of fission products to the general environment. Through the action of stratospheric winds this material has

been more or less uniformly distributed over the face of the earth, with somewhat greater concentrations in the United States and generally with greater abundance in the Northern Hemisphere than in its southern counterpart.[5] The mixture of fission products emits both gamma and beta radiations. It is estimated that from the fallout material thus far descended to earth there will be a total average lifetime exposure of about one-tenth of a roentgen equivalent.[6] This amounts to approximately 1 per cent of the lifetime exposure of people to natural radiation of the earth and cosmic sources.

A third source of radiation exposure is in the use of x-ray for various purposes. Improperly shielded industrial x-ray equipment may cause exposure of operators. Careless and incompetent operation of x-ray equipment may cause unnecessary exposure not only of the patient but of the operating technicians. It has been estimated that the average individual exposure from such sources may amount to three or four roentgens during the reproductive lifetime.[4]

An additional note should be made of a particular fission product which is now in existence in our environment as a result of nuclear detonations. This is the isotope strontium-90, which has a half-life of 28 years and, because of its close chemical similarity to calcium, mimics the latter element very markedly in its biologic behavior. Strontium-90, acquired through a series of biologic cycles, is deposited in the bone tissue where it is firmly bound. It emits beta radiation of considerable energy but of limited penetration, so that the effects of this isotope are limited to those cells within the immediate proximity of the point of deposition of the strontium-90.

Over the entire United States there is now an average value of approximately 10 millicuries of strontium-90 per square mile.[7] Minute but detectable amounts of the isotope exist in the skeletons of all persons now living, with some values reaching a level of about one-thousandth of one microcurie of strontium-90 in the body. This is 1/1,000 of the amount which is presently considered to be the permissible body burden for industrial purposes.

The biologic effects of radiation and the manifestations of injury that we have been discussing are observed only in the presence of rather large exposures. Detectable injury is clearly undesirable and unacceptable. At this point one encounters the substantial intellectual difficulty involved in the statement of what is acceptable and workable as a margin of safety. As the exposures become smaller, the probability of injury obviously likewise decreases. It presumably does not reach zero, but certainly at some point the likelihood of injury becomes sufficiently small to be acceptable among the other hazards to living. The continued review of all scientific information bearing on these matters has been carried on for many years by the National Committee on Radiological Protection. Its recommendations have constituted the basis for regulation and practice in connection with radiation exposure in the United States. Its recommendations are generally uniform with those of the International Commission on Radiation Protection.

The problem of standards may be illustrated by consideration of two extreme cases. In the United States we will kill approximately 40,000 people this year with automobiles—over one-third of these will be young people. From an estimated average loss of 40 years of lifetime per individual, this is equivalent to 1,600,000 man years of adult life each year or about 1/100 of a year per person in the United States occurring annually. This comparison omits consideration of the cost in effective life of the much greater number seriously injured each year. While there is concern about this traffic

slaughter, it is evident from our own actions that we consider the cost to be within reason for the comfort and convenience of the transportation furnished by the automotive vehicle.

In contrast, there is frequently expressed grave apprehension over the world-wide spread of radioactive contamination from the occasional nuclear detonation. As we have seen, the total exposure from this source is of the order of 1 per cent of that received from natural radioactivity. In contrast to the highway hazard, we have no method sufficiently sensitive to detect the effect of this small amount of radiation either upon the present or upon future generations.

One of the most fundamental and at the same time most difficult problems is the determination of the degree of hazard associated with any particular factor and the further achieving of a consensus as to what level of hazard should be acceptable in our present-day society. One of the major problems of scientific research is the continued refinement of our knowledge concerning the quantitative aspects of hazard in connection with all industrial risks, including radiation. It is the responsibility of health specialists, sociologists, and economists to arrive at a more definitive statement of the degree of risk which is, in practice, acceptable in a modern society.

It seems obvious that the basis for concern for the public health is tenuous as far as the present rate of testing nuclear weapons is concerned. The same cannot be said for the prospective enormous and rapid expansion of nuclear power. Even a modest nuclear power program will bring into existence vastly greater quantities of radioactive materials than are produced in the development of nuclear weapons. Technical ingenuity of the highest order will be required to control these operations so that at no time are dangerous quantities released to the environment. Good technics are already available, but continued development will be necessary.

The continuous and prolonged research required to secure sufficiently accurate answers to the fundamental questions which confront us is the responsibility of all national groups engaged in the creation of the atomic era. By the freest possible interchange of scientific information and operational experience, it should be entirely possible to control effectively the dangerous aspects of nuclear radiation and make possible the widespread enjoyment of the vast benefits which are potential in this new form of energy.

The importance of the protection of the radiation worker was stressed from the beginning of the United States atomic energy program. Enormous efforts have been expended by the United States Atomic Energy Commission to insure that the public health should receive primary consideration in all of its operations. This has involved the vigorous support of fundamental physical, chemical, and biologic research in many laboratories. It is through careful research and thoughtful planning that the continued expansion of the atomic energy industry can occur within the limits of safety for the people of all lands.

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Fluoride Domestic Water and Periodontal Disease

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This is another of the many factual findings that health people must have at their command if they are to answer with convincing scientific evidence the misinformation spread by fluoridation's opponents. The last paper of the "Newer Developments in Water Fluoridation" symposium will follow next month.

Other reports in this series describe some basic epidemiologic characteristics of periodontal disease in urban[1] and in rural[2] populations and explore an unknown social factor, indicated by levels of education, which is associated with the severity of disease once present.[3] This paper summarizes the evidence bearing upon the relation of periodontal disease to use of a fluoride-bearing domestic water, including all pertinent data collected by us through the summer of 1956. The data are based on examinations of nearly 20,000 persons of both sexes, ranging in age from seven to 78 years.

Though many opinions have been expressed in this area, very little epidemiologic evidence has been offered. Brown, Kohli, MacDonald, and McLaren surveyed children aged six to 14 years in three Canadian cities, using the P-M-A index of gingivitis. The domestic waters in these cities carried none, 1.0, and 1.3 ppm of fluorides (F), respectively. The least gingivitis was found in the community with 1.0 ppm of fluoride; rather more gingivitis was found in the fluoride-free community; and substantially more in the community with 1.3 ppm of fluoride.[4] In 10-year summaries of the fluoridation study at Newburgh, N. Y., Ast and his co-workers have reported that there was slightly but significantly more gingivitis in children of Kingston, the control city, than in children of Newburgh who had used a fluoridated water for from seven to 10 years.[5, 6] This examination was carried out by the author and its findings will be presented here in greater detail.

Method

If any relation between the use of a fluoride domestic water and health or disease in periodontal tissues exists in fact, it should readily be demonstrable by the methods which have established the inhibitory effect of fluoride waters upon dental caries. The most common method has contrasted a fluoride-free population with others using domestic waters with varying fluoride concentrations. Additional evidence has resulted from contrasts of the status of natives in a fluoride community with the status of migrant persons who have used the same water for a shorter period of time. Both methods are applied to periodontal disease in the present report.

The examination and scoring methods previously described[7] were used throughout the series. All of the examinations were performed by the author, or by observers directly calibrated with him.

Fluoride Versus Nonfluoride Populations

Three studies have been carried out by us which contrast the periodontal status of residents of fluoride and non-

Table 1—Relative Prevalence and Severity of Gingival Disease in Children of Newburgh and of Kingston, N. Y., (Mar. 1955)

Age Group	Mean Age, Years	No. Examined	Per cent Negative	Mean Score
Newburgh (1.0 ppm F Since 1945)				
7–9	8.9	238	91.6	0.02
10–12	11.3	352	92.0	0.03
13–14	13.6	29	96.6	0.03
All ages	10.5	619	92.1	0.02
Kingston (Fluoride-Free)				
7–9	9.0	246	84.1	0.03
10–12	11.3	328	84.8	0.04
13–14	13.6	18	88.9	0.08
All ages	10.4	592	84.6	0.04

fluoride communities. They are presented here in order of the ages of the persons examined and of the concentration of fluoride in the three domestic waters.

Newburgh-Kingston — The domestic water of Newburgh, N. Y., was fluoridated early in the summer of 1945 in a study project conducted by Ast and his co-workers, under the auspices of the State of New York Department of Health. The water in nearby Kingston was maintained fluoride-free as a control. Through the courtesy of Ast and his group about 600 children aged seven to 14 years were examined for periodontal disease in each of the cities in March of 1955. The results of this examination are summarized in Table 1.

The proportions of children free from overt signs of disease were higher throughout the age range in children of Newburgh, the fluoride city, than in children of Kingston, the control. For the whole groups the difference between the proportions is significant.* Mean population scores, which reflect both the prevalence and severity of disease, were uniformly higher in Kingston than in Newburgh; for the whole groups the difference is on the borderline of significance at the $P = 0.05$ level. This difference is due wholly to the higher prevalence of disease in Kingston. When present, disease was of about equal severity in the two communities. One child with marginal periodontitis which had progressed to the stage of frank pocket formation was found in each city.

Colorado Springs-Boulder — Native adults of Colorado Springs, Colo. (with a domestic water carrying about 2.5 ppm of fluoride) and of Boulder, Colo. (with a domestic water essentially fluoride-free) were examined in the fall of 1950. Their dental caries status has been reported previously.[8] Data were

* When not stated, the level of significance used is the $P = 0.01$ level.

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Table 2—Relative Prevalence and Severity of Periodontal Disease in Native Residents of Boulder and of Colorado Springs, Colo. (1950)

Age Group	Mean Age	Number Examined	Per cent Negative	Per cent with Pockets	Mean Score	Additional Per cent Edentulous *
			Colorado Springs (2.5 ppm F)			
20–24	22.7	72	58.3	4.2	0.33	0.0
25–29	27.5	101	55.4	4.0	0.39	0.0
30–34	32.2	82	54.9	15.9	0.66	0.0
35–44	39.6	124	46.0	23.4	0.91	4.6
All ages	31.6	379	52.8	12.9	0.60	1.6
			Boulder (Fluoride-Free)			
20–24	22.4	51	52.9	7.8	0.47	0.0
25–29	27.1	41	29.3	19.5	0.81	0.0
30–34	32.0	27	44.4	22.2	0.66	6.9
35–44	39.3	25	16.0	56.0	1.54	26.5
All ages	28.5	144	38.2	22.2	0.79	7.1

* Not included in the totals listed under "numbers examined."

limited to persons aged 20–44 years because the fluoride content of Boulder water prior to 1906 could not be established. Periodontal findings for these people are summarized in Table 2.

Periodontal disease was more prevalent in lifetime residents of Boulder, using a fluoride-free water, than in lifetime residents of Colorado Springs, who had always used a water containing about 2.5 ppm of fluoride. There were significantly fewer Boulder natives free of disease and significantly more Boulder natives with advanced disease. These differences are reflected in the relative scores. Once initiated, disease was equally severe in the two communities; mean scores for the 89 persons in Boulder and for the 179 persons in Colorado Springs who exhibited signs of disease were identical at 1.28. As in the Newburgh-Kingston study, the observed differences were wholly due to the higher prevalence of disease in the community using the fluoride-free water.

These findings are based upon direct observation by the examiner. While weaker as evidence, indirect findings based upon histories supplied by examinees were consistent with the direct findings. On the basis of these histories, slightly more teeth per person had been extracted because of periodontal disease in Boulder than in Colorado Springs.[8] Among persons wholly edentulous three in Colorado Springs (0.8 per cent of the population examined) and four in Boulder (2.8 per cent of the population examined) testified that periodontal disease had been the major reason why their teeth had been extracted.

Bartlett-Cameron—Smaller groups of older adults were examined in 1953 in Bartlett and in Cameron, Tex. Until a defluoridation plant was installed a short time before this examination Bartlett's domestic water had contained about 8.0 ppm of fluoride. The fluoride content of Cameron's water was about 0.4 ppm.

The objective in 1953 was the reexamination of a group of people who had received detailed physical examinations 10 years previously. Of these

original subjects, 76 were reexamined in Bartlett and 80 in Cameron. Very few were natives of either city. The average length of residence had been 37 years in Bartlett, and 38 years in Cameron. No differences in periodontal disease, on the basis of clinical and x-ray examination, had been seen in these people in 1943.[9] In 1953 there were no significant differences between the groups, as estimated by the P-M-A index and by the degree of alveolar bone resorption disclosed by x-ray.[10] The relative status of these two groups, as scored by the periodontal index, is shown in Table 3. Because of the small numbers of dentulous persons and the wide age range (25 through 78 years) findings are shown for the total groups.

Nearly all the persons seen in both cities exhibited some sign of disease. Differences seen were small and favored the Bartlett group, which had used the water containing about 8.0 ppm of fluoride. Unlike the two contrasts previously cited there was a difference in severity of disease; periodontal destruction was appreciably more advanced in the low-fluoride group. There were about twice as many persons in Cameron as in Bartlett (11, or 13.8 per cent of the group in Cameron against 5, or 6.6 per cent of the group in Bartlett) in whom tissue destruction was so advanced that full-mouth extractions were indicated.

Indirect evidence was opposite in direction. About twice as many of the edentulous persons in Bartlett as in Cameron (21, or 26.6 per cent of the whole group in Bartlett against 9, or 11.3 per cent of the whole group in Cameron) believed that periodontal disease had been the primary reason for loss of their teeth. If the numbers requiring full-mouth extractions are combined with these, tooth mortality findings differ only by chance between the two groups, and group scores for the remaining persons are about the same. This supports the previous conclusion, based on other methods of estimation, that "the periodontal health of the Bartlett and Cameron subjects was approximately the same." [10]

Summary—In each of these contrasts the more favorable condition of the periodontal tissues was observed in the fluoride community. In the two adult groups indirect evidence was opposite in direction. The three populations included persons aged seven through 78 years. Two of the groups had used a domestic water containing fluorides considered to be excessive in amount—2.5 and 8.0 ppm, respectively. The fluoride water had been consumed for from seven years in children to as long as 44 years in adults. If use of a fluoride domestic water has any adverse effect upon the health of periodontal tissues, it is quite likely that this effect would have been revealed clearly in one or all of these studies. The fact that no ad-

Table 3—Relative Prevalence and Severity of Periodontal Disease in Residents of Bartlett, Tex. (with an Average of 37 Years' Use of a Domestic Water Containing About 8.0 ppm F) and of Cameron, Tex. (with an Average of 38 Years' Use of a Domestic Water Containing About 0.4 ppm F)

City	No. Examined	Mean Age	Per cent Negative	Per cent with Pockets	Mean Score	Additional Per cent Edentulous *
Bartlett	45	54.3	4.4	62.2	1.70	40.8
Cameron	64	53.9	3.1	68.8	2.01	20.0

* Not included in the totals listed under "number examined."

Table 4—Periodontal Scores of Native and Migrant Children in a Series of Communities with Domestic Waters Containing About 1.0 Parts per Million of Fluorides, 1952–1956

Group	Year of Examination	Years F Usage, Natives	Natives			Migrants			Difference (Native Score Minus Migrant)
			No.	Mean Age	Mean Score	No.	Mean Age	Mean Score	
Montgomery Co., Md. (A)	1952	0.0	307	8.2	0.01	195	8.6	0.01	....
	1956	4.0	497	8.3	0.02	443	8.5	0.02	....
Montgomery Co., Md. (B)	1952	0.0	237	13.8	0.06	233	13.9	0.04	+0.02
	1953	1.0	250	13.9	0.19	230	13.6	0.16	+0.03
	1954	2.0	233	13.7	0.10	244	13.7	0.08	+0.02
	1955	3.0	221	13.4	0.04	186	13.5	0.04	....
	1956	4.0	176	13.5	0.05	197	13.5	0.06	−0.01
Prince Georges Co., Md. (C)	1952	0.1	874	9.1	0.03	435	8.9	0.02	+0.01
	1956	4.1	778	8.8	0.03	680	8.9	0.02	+0.01
Prince Georges Co., Md. (D)	1952	0.1	303	13.9	0.06	171	13.8	0.04	+0.02
	1953	1.1	201	14.0	0.21	161	14.1	0.17	+0.04
	1954	2.1	238	13.6	0.05	198	13.7	0.07	−0.02
	1955	3.1	322	13.6	0.08	306	13.6	0.06	+0.02
	1956	4.1	499	13.6	0.11	414	13.7	0.08	+0.03
Prince Georges Co., Md. (E)	1953	1.2	449	14.0	0.36	173	14.1	0.29	+0.07
	1954	2.2	441	13.9	0.26	191	13.9	0.26	....
	1955	3.2	315	14.1	0.24	143	14.2	0.19	+0.05
	1956	4.2	423	13.9	0.18	191	13.9	0.18	....
Muskegon, Mich. (F)	1952	1.3	147	15.5	0.06	95	15.4	0.11	−0.05
	1953	2.3	158	14.1	0.17	96	14.7	0.14	+0.03
	1954	3.3	155	15.1	0.04	106	15.8	0.05	−0.01
Prince Georges Co., Md. (G)	1954	2.3	495	16.9	0.30	258	16.9	0.26	+0.04
Muskegon, Mich. (H)	1955	4.3	645	9.5	0.04	205	10.3	0.08	−0.04*
Grand Rapids, Mich. white (I)	1952	7.8	288	14.4	0.07	147	14.8	0.05	+0.02
	1953	8.8	296	13.7	0.10	139	14.2	0.13	−0.03
	1954	9.8	595	14.5	0.05	431	14.7	0.06	−0.01
	1955	10.8	627	14.4	0.07	501	14.7	0.09	−0.02
Grand Rapids, Mich. Negro (J)	1952–1955	8–11	110	14.6	0.14	279	14.8	0.11	+0.03
Aurora, Ill. (K)	1953	13.5	360	13.5	0.09	207	13.5	0.11	−0.02

* Difference significant at the P = 0.01 level.

verse effect is evident is wholly incompatible with any hypothesis that use of a fluoride-bearing domestic water is harmful to the periodontal tissues of children or of adults.

On the other hand, the slight differences in favor of the fluoride communities are too weak for acceptance as evidence that use of a fluoride water is beneficial to periodontal tissues. With the exception of Boulder the findings for these groups are very similar in all details to those for the total population of white urban residents so far examined.[1] In this total population most of the other persons aged 20 years or older were residents of Baltimore, using a fluoride-free water at the time of examination.

Natives Versus Migrants in Fluoride Communities

Marked differences in caries inhibition have been demonstrated by within-group analyses of residents of fluoride areas. Those children who had used the fluoride water since birth have shown significantly lower caries scores than those children who had moved into the community at some time after birth and had, hence, used the same water for a shorter period of time.[11] Accordingly, a similar analysis was applied to the periodontal data gathered by us in such communities. The examinations of about 18,000 children in communities with domestic water supplies that had contained about 1.0 ppm of fluorides for varying lengths of time are summarized in Table 4.

If use of a fluoride domestic water is actually harmful to periodontal tissues, the data of Table 4 should reveal a trend opposite in direction to that seen in the inhibition of dental caries, i.e., the longer the fluoride water has been in use by natives, the more migrant children should excel native children in periodontal health. When the duration

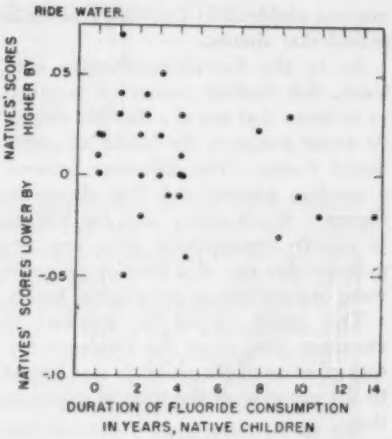

Figure 1—Relation Between Absolute Differences in Periodontal Scores, Native and Migrant Children in Fluoride Communities, and the Number of Years Native Children Had Consumed a Fluoride Water.

of fluoride consumption by natives is plotted against the difference in scores * between native and migrant children the result is as shown in Figure 1.

Simple inspection of this figure shows that no adverse trend, i.e., a worsening of the relative periodontal status of native children related to the length of time they have consumed a fluoride-bearing domestic water, is apparent. On analysis there is a weak but definite negative correlation indicating that, in general, the greater their advantage in the consumption of water-borne fluoride, the more native children tend to excel

* In this array periodontal scores are generally elevated for a group examined coincident with the peak, or early on the declining slope, of an outbreak of an upper respiratory infection, sometimes influenza A or B (reference 1). This was generally the case in the schools examined in 1953, and was observed sporadically in other years. Comparisons between total scores are misleading unless corrections for this factor are made. But differences between scores within groups are virtually independent of this factor, since the outbreaks tend to affect native and migrant children to an equivalent degree.

migrant children in the health of their periodontal tissues.

As in the fluoride-nonfluoride contrasts, this finding cannot be accepted as evidence that use of a fluoride domestic water enhances the health of periodontal tissues. The difference between a random pattern and that shown in Figure 1 is not great. But the finding is clearly incompatible with any hypothesis that use of a fluoride domestic water is injurious to periodontal health.

This result cannot be ascribed to examiner bias, since the residence history of none of the children was known to the observer at the time of examination.

Summary and Conclusions

The periodontal status of residents of three fluoride communities has been compared with the periodontal status of residents of three comparable low- or nonfluoride communities. Ages of the persons studied ranged from seven to 78 years. The domestic water supplies of the fluoride communities carried about 1.0, about 2.5, and about 8.0 ppm of fluorides, respectively. Fluoride subjects had used the domestic water for from seven to 44 years. Indirect evidence in the two adult groups was opposite in direction. In each case the fluoride group exhibited the more favorable periodontal condition on direct examination.

Native school children in a series of communities, each with about 1.0 ppm of fluorides in its domestic water, were compared with migrant children in the same communities. There was a weak tendency for the periodontal health of native children to improve, relative to that of migrants, as their advantage in water-borne fluoride consumption increased.

Most of the differences were slight. They are not adequate to support a hypothesis that use of a fluoride water results in improved health of periodontal tissues. The findings are, however, wholly incompatible with any hypothesis that the periodontal tissues of children or of adults are harmed by use of a fluoride-bearing domestic water.

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Pasteurization of Milk Containing the Organism of Q Fever

JOHN B. ENRIGHT, Ph.D.; WALTER W. SADLER, D.V.M.; and ROBERT C. THOMAS

Any finding that suggests the need for tighter supervision of the pasteurizing process becomes of immediate moment to the public health administrator and all in his public health engineering staff.

The etiologic agent of Q fever, Coxiella burnetii (Derrick), causes an infection in many species of animals that is not usually associated with overt signs of illness.[1] The disease in man may be acute or chronic in course and mild or severe in reaction. Explosive outbreaks of the disease occur in man and may often be traced to a common source of exposure.[1] On the other hand, individual cases may occur sporadically in a community in which it is difficult to determine the origin of the infection. In the United States investigation of various outbreaks of Q fever have revealed that cows, sheep, or goats are the important sources of infection for man.[2-5] The rickettsiae are shed in the milk of the infected animal[6-9] and this vehicle provides one method whereby the organism may be transported to man's immediate environment.

Early in the studies of Q fever in California it was discovered that C. burnetii could be recovered from milk pasteurized according to the recommended minimum standards.[10, 11] The hazard to the public health implied by this finding prompted the director of the California State Department of Public Health to look into the possibility of a study to determine the times and temperatures necessary in the pasteurization of milk to eliminate viable C. burnetii. This inquiry resulted in a cooperative study being undertaken by the Public Health Service and the School of Veterinary Medicine, University of California, with the close support of the California State Departments of Agriculture and Public Health.* The project was implemented by an agreement between the University of California and the Public Health Service which specified that the work should include a determination of the thermal death-time curve of C burnetii in milk within the time and temperature ranges utilized in commercial pasteurization processes. It was further specified that the project would incorporate studies on a commercial scale, utilizing pasteurization equipment designed and operated in conformance with the "Milk Ordinance and Code Recommended by the U. S. Public Health Service," as well as the directions of the manufacturer.

The study was conducted in the Department of Public Health, School of Veterinary Medicine, University of California, Davis, Calif. The Milk and Food Program and the Robert A. Taft Sanitary Engineering Center, both components of the Division of Sanitary Engi-

* The cooperation and assistance of the personnel of these agencies aided the study greatly. The authors wish to express their indebtedness.

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neering Services, and the Communicable Disease Center, which was the major financial contributor, were the participating agencies of the Public Health Service. The Dairy Industries Supply Association, Inc., loaned the commercial pasteurization equipment used in the study.* Additional funding of the project was obtained from the Milk Industry Foundation, Inc., and the Division of Grants, Public Health Service.†

It is the purpose of this communication to present the results of this study and certain recommendations for the pasteurization of milk made by a special study group convened to consider these results. A full and detailed account will soon appear in a Public Health Service monograph.

Materials and Methods

Before a realistic thermal-resistance study could be conducted it was necessary to obtain answers to two fundamental questions. One concerned the evaluation of several methods to determine the most accurate procedure for determining the presence of small numbers of viable rickettsiae in a test sample. Since C. burnetii will not grow on artificial media, and because it induces neither constant symptomatology nor pathology in animals, the criterion for infection is the appearance of specific complement-fixing antibody in the serum of the experimental host. The question arose as to the possibility of the heat-killed rickettsiae also inducing the formation of specific antibody, for if this occurred the true thermal-death point would be masked. Information on this point was obtained by testing different concentrations of C. burnetii, suspended in milk, by four different procedures. All four methods were used on the same sample of milk and included single passage and serial passages in different experimental hosts or combinations of hosts. Some of the test samples were examined unheated and others after being subjected to different combinations of time and temperature.

The other pertinent question concerned the maximum number of C. burnetii that might be found in the milk of an infected cow. The determination of this number was an extremely critical point in the study, since the number of organisms has definite bearing on the heating required for their destruction. Several lines of investigation were used to obtain information on this point. Milk supplies of three communities were sampled; milk was obtained from widely separated areas of California in which the practice of husbandry varied and included many different breeds of dairy cattle; the milk of dairy cows within an infected herd was sampled at intervals during which time some of the animals calved; a dairy cow was infected and the number of rickettsiae in her milk determined; and information was obtained from investigators in other parts of the United States.

After gaining information on these fundamental points, a thermal-resistance study was conducted in the laboratory with C. burnetii suspended in whole raw milk. This was followed by the application of the laboratory findings in a study of the thermal resistance of the rickettsiae suspended in whole raw milk and subjected to different combinations of time and temperature in regular commercial heat exchangers installed in a modern pasteurization plant using standard procedures and controls.

Results

Statistical evaluation of the four methods of determining the presence of small numbers of viable C. burnetii in a heated sample revealed that serial passages in experimental hosts was the most accurate procedure. Results using

* The authors gratefully acknowledge this contribution.

† The authors wish to express their appreciation for this aid.

one passage in guinea pigs were significantly influenced by the killed rickettsiae contained in a relatively high proportion in the heated samples. Therefore, two consecutive passages in guinea pigs was the method used throughout the study to determine end points of infectivity.

One hundred and nine raw milk samples were tested. These were obtained at the creamery upon delivery from the dairy farm and each sample was a composite of the milk from one farm. Eight of these samples were found to contain viable C. burnetii. Three hundred and seventy-six retail milk or cream samples were examined. Each sample was from a different creamery and was a composite from different producers supplying the creamery. Of the 376 retail samples, 14 raw and one pasteurized sample contained the rickettsiae. The maximum number of organisms demonstrated in these samples was that number contained in 1,000 infective guinea pig doses.*

The milk from 18 of 137 individual cows in a dairy herd contained viable C. burnetii. Titration of these positive milk samples showed three contained 1,000, five contained 100, five contained 10, and five contained one infective dose per 2 ml. Serologic evidence indicated that 12 of the 18 positive animals were infected at least 200 days prior to sampling their milk. The milk of four of these positive animals was collected 205 days later after each had calved. One of the animals was found to be still shedding 1,000 infective guinea pig doses per 2 ml of milk. Serologic evidence indicated that this animal was infected with the organism of Q fever at least 405 days prior to this second milk sampling. C. burnetii could not be demonstrated in the milk of the other three animals.

The milk of an experimentally infected dairy cow was found to contain 10,000 infective guinea pig doses of C. burnetii. This animal had been infected by introducing the Henzerling strain of the organism into the teat canal. The positive milk sample was obtained on the ninth day after inoculation. This cow was nursing two calves at the time and, therefore, was presumed to have been milked out each day. Information from other investigators revealed that 10,000 infective guinea pig doses per ml of milk was the maximum number of organisms that had been demonstrated in the milk of infected cows.

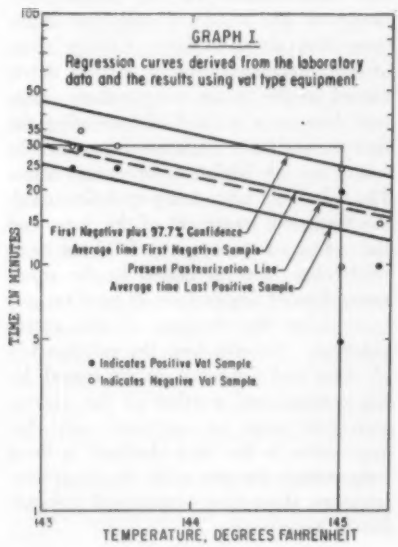
In the thermal-resistance study in the laboratory C. burnetii in concentrations of 100,000 infective guinea pig doses per 2 ml of milk were used. Well controlled experiments were conducted in which the test population suspended in whole raw milk was subjected to temperatures of from 141°–151° F for different lengths of time. The absence of good sampling devices prevented accurate observations in the temperature range of 153°–163° F with the short-time intervals necessary. Extrapolation of the thermal-resistance curves determined in the lower temperature range was done as a method of indicating the time-temperature relationships to be found in the higher temperature zone. The relatively large test population used, the statistical treatment of the data, and the use of a two sigma, or 97.7 per cent, confidence interval added to the minimum time of destruction all tend toward minimizing the dangers of this extrapolation. Nevertheless, the relationship of time and temperature expressed by the extrapolated portion of the regression line may be accepted only for application to the data obtained in these temperature ranges with the high-temperature, short-time commercial pasteurization equipment.

* An infective guinea pig dose may be defined as the minimum number of C. burnetii required to infect a guinea pig by intraperitoneal inoculation. In this study these organisms were always contained in 2 ml of inoculum.

Table 1—Times at Pertinent Temperatures on the Regression Lines Derived from the Laboratory Data

Temperature Degree F	Regression Lines		
	50 per cent End Point	Minimum Time of Destruction	Minimum Time of Destruction Plus 2 Sigmas
143	29.39 min.	33.02 min.	46.03 min.
145	16.29 min.	18.31 min.	25.42 min.
160	11.7 sec.	13.2 sec.	20.4 sec.
161	8.7 sec.	9.8 sec.	15.4 sec.
162	6.5 sec.	7.3 sec.	11.6 sec.

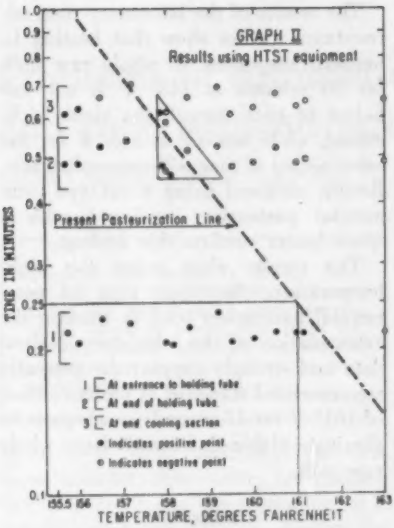
In Table 1 are some selected time-temperature points on the regression lines derived from the laboratory data. These are arranged according to temperature and the intercept at the time point on the 50 per cent end point of infectivity, the minimum time of destruction, and the minimum time of destruction plus the two sigma confidence interval regression curves. The maximum time of survival and minimum time of destruction end points from which the regression lines were derived include the factor representing the lethal effect of the heating-up and cooling-down periods expressed as equivalents of the time at the holding temperature.


GRAPH I
Regression curves derived from the laboratory data and the results using vat type equipment.
First Negative plus 97.7% Confidence
Average time First Negative Sample
Present Pasteurization Line
Average time Last Positive Sample
• Indicates Positive Vat Sample
○ Indicates Negative Vat Sample
TIME IN MINUTES
TEMPERATURE, DEGREES FAHRENHEIT
143
144
145

In Graph I are the regression lines derived in the laboratory study together with the present pasteurization line. Dots representing points of maximum survival and circles marking the points of minimum destruction of the organism using the vat-type of commercial pasteurization equipment are also shown on Graph I. The times recorded using this type of commercial equipment are those at the holding time only.

Graph II illustrates the relationship between the present pasteurization curve and the data obtained using a commercial high-temperature, short-time pasteurizer. In this study 15 temperature points were investigated, all within the range of from 155.5° to 163° F. Samples were withdrawn at the entrance to the holding tube, at the end of the holding tube, and at the end of the cooling section during each temperature trial. The time each sample was subjected to heat was calculated and includes the lethal effect of the heating-up and cooling-down periods expressed in equivalents of holding time. In this way 45 samples were collected. In Graph II the dots represent those samples that contained viable C. burnetii while the circles represent samples in which the presence of viable rickettsiae could not be demonstrated.

Through an error in dilution the or-


GRAPH II
Results using HTST equipment
Present Pasteurization Line
TIME IN MINUTES
TEMPERATURE, DEGREES FAHRENHEIT
1 At entrance to holding tube
2 At end of holding tube
3 At end cooling section
• Indicates positive point
○ Indicates negative point

ganism in concentrations of one to 10 million infective guinea pig doses per 2 ml of milk were subject to heat in the HTST pasteurizer. This error in the dilution of the 100 gallons of milk used in each trial was not discovered until the experiment was finished due to the length of time needed for its determination. The greater exposure to heat needed to destroy this number of organisms over that required to destroy the number apt to be found in cow's milk may be regarded as an additional safety factor in considering the results of this experiment.

Discussion

Although 10,000 infective guinea pig doses per ml of milk was the maximum number of C. burnetii demonstrated in the milk of infected dairy cows, consideration of several possibilities prompted the acceptance of 100,000 infective guinea pig doses per 2 ml of milk as a better number of organisms to use in this study. Not all breeds of dairy cows were investigated and some might be capable of shedding greater numbers in their milk than those tested. This could be of possible significance in the pasteurization of milk from pure-bred dairy herds. It was suggested that the greatest number of organisms might appear in the milk shortly after freshening or during conditions of stress. Many of these conditions were encountered in the surveys of infected dairy cows, but not all. Further, the study of the individual animals in a herd in which the infection was known to have existed for an appreciable time revealed an infection rate of 13.1 per cent. However, some of the composite samples of the milk from a creamery were shown to contain 1,000 infective guinea pig doses per 2 ml. The results of these two surveys would seem to indicate that some animals were shedding greater numbers of C. burnetii in their milk than that number contained in 1,000 infective guinea pig doses.

The results of the laboratory thermal-resistance studies presented in part in Table 1 show that heating C. burnetii suspended in raw milk at 143° F for 30 minutes does not result in their destruction, while elevating the temperature to 145° F and holding for the same length of time will accomplish this with an appreciable margin of safety. Comparison of the results obtained with the vat-type heat exchanger, equipped with a space heater, with those obtained in the laboratory confirm this conclusion. It may be seen in Graph I that C. burnetii did survive time and temperature combinations greater than those represented by the present pasteurization curve, but never at combinations equal to those represented by the regression curve derived from the minimum destruction end points plus a two sigma, or 97.7 per cent, confidence level.

The results obtained when using the HTST type of commercial pasteurization equipment are related to the present pasteurization line in Graph II. While the use of a 15-second holding period

and a two-degree temperature interval precludes precise determination of maximum survival and minimum destruction end points, examination of the 44 points indicates that the present pasteurization curve approximates the thermal regression curve of C. burnetii in this temperature range. Further strength is given to this impression by consideration of the seven points located in the triangle in Graph II. Here there are positive and negative points within a 0.5° F and 0.12 minute range. This relatively narrow range straddles the present pasteurization curve, but falls well below the minimum time of destruction end point plus a two sigma or 97.7 per cent confidence interval regression line extrapolated from the laboratory data.

Although the time points presented in the study with the HTST equipment include the total heat treatment—heating-up, holding, and cooling-down—of the organism as pointed out earlier, variation in equipment design and rates of product flow necessitate that pasteurization be based on the time-temperature combinations obtained in the holding tube. The interpretation of the data must be related to these facts. However, if the 15-second interval in the holding tube is strictly adhered to and the temperature of 161° F maintained, it is highly improbable that the total equivalent heat treatment of the organism will fall below the 161° F for 15.4 seconds point on the regression line derived from the minimum time of destruction end points plus a two sigma confidence interval data obtained in the laboratory.

Summary

The maximum number of C. burnetii demonstrated in the milk of infected dairy cows is in the magnitude of that number found in 10,000 infective guinea pig doses per ml. The relation of this number of organisms to the concentration used in the thermal-resistance studies is presented.

The results of the laboratory thermal-resistance studies show that heating C. burnetii suspended in whole raw milk for 30 minutes at 143° F is not sufficient to eliminate all the viable rickettsiae, while heating at 145° F for the same period of time will accomplish this. Results obtained using a vat-type commercial pasteurizer equipped with a space heater confirm this finding.

The results when using the high-temperature, short-time type of commercial pasteurizer tend to confirm the extrapolation of the laboratory derived data and strongly support the presently recommended standard of pasteurization of 161° F for 15 seconds as adequate to eliminate viable C. burnetii from whole raw milk.

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Problems of Antibiotics in Food as the Food and Drug Administration Sees Them

HENRY WELCH, Ph.D., F.A.P.H.A.

Though this paper is chiefly concerned with the possibility of harm from the presence of penicillin in milk, there is much else in it of direct interest to many of us, in addition to those to whom it was addressed.

In 1942 when penicillin was first introduced into this country few realized that this event was the beginning of a new billion dollar industry. During the first year of commercial production about 29 pounds of penicillin were made available. In this past year over 440 tons were produced. It need not be emphasized here that this drug, which has been proved a highly antigenic substance, has had a wide and in some cases indiscriminate use. Its remarkable curative powers, more pronounced perhaps in the early days than now, resulted in its being injected, insufflated, given by mouth, spread on every part of the body, and sprayed intraabdominally, intracisternally, intrapleurally, and intravaginally—no surface or cavity of the body remaining inviolate.

There are 150 preparations of penicillin available for clinical use today and they run the gamut of injectibles, ointments, powders, sprays, tablets, troches, and vaginal bougies. Penicillin has saved tens of thousands of lives in the past 14 years and the reduction in morbidity, and complications of diseases has affected the lives of millions. Nevertheless, with advances in therapy, we unfortunately have to face the accompanying untoward side-reactions that invariably follow. In the case of penicillin, a relatively atoxic drug, its "side reaction" is its potentiality for sensitizing certain unfortunate individuals.

It is estimated that about 10 per cent of our population have a "proneness" to become sensitive during their lifetime to some food, drug, cosmetic, or other substances while the great majority of individuals are resistant. Within this 10 per cent there is a large variation in susceptibility to sensitization: some acquire it easily while others are most resistant. Some may be sensitive on first contact (the atopic group), others require one contact, while others may require several contacts before exhibiting a reaction. The reactions, too, vary in degree from mild, transient rashes to prolonged urticaria and from a brief asthmatic attack to fatal anaphylactoid shock. Allergic manifestations occur less frequently in children.

Penicillin is still one of our most important and most widely used therapeutic agents. It is unlikely that any one of us will go from "cradle to grave" without its being administered to us by our physician for sound medical reasons. Thus, with the most recent population figures for this country of 170 million, we are concerned primarily

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with perhaps 17 million people who may react to a contact with penicillin, be it through its therapeutic use for some disease condition or inadvertently through eating or drinking foods containing it. In the first case the physician and patient have a choice, but in the latter instance there is none.

As early as 1948 it was reported that milk from cows treated for mastitis by intramammary infusion contained enough drug to inhibit cheese-starter cultures. Recognizing that in a similar manner antibiotics in milk might reach the consumer, the Food and Drug Administration required producers of antibiotic preparations for mastitis to insert a statement in the circular accompanying each package that milk from treated cows be discarded if intended for human use for at least three days following medication. During the past three years three surveys have been made of fluid market milk to determine its content of antibiotics. The data obtained have been published.

To summarize these results briefly, in the first survey 3.2 per cent of 94 samples were found to contain penicillin. In this preliminary study a number of other dairy products, such as cheese, butter, dried milk, and evaporated milk, were tested. No antibiotic activity was demonstrated in these products. In the second survey 474 samples of market milk were tested and 11.6 per cent were found to contain penicillin. The concentrations in the milk varied from 0.003 unit per ml to 0.08 unit per ml (highest amount 80 units per quart).

In the third survey, completed in January of this year, 1,706 samples were examined and these were collected from all the 48 states and the District of Columbia. This extensive survey showed penicillin in concentrations of 0.003–0.550 unit per ml in 5.9 per cent of the samples examined (highest amount 550 units per quart). In addition, one of the penicillin positive samples apparently contained streptomycin, and 17 additional samples (approximately 1 per cent) appeared to contain bacitracin, one of the tetracyclines, or a combination of these drugs. Penicillin was confirmed by the penicillinase identity test, while the other antibiotics could not be specifically identified.

The Food and Drug Administration has had a number of letters from consumers, those interested in the dairy industry, and state officials, indicating their concern and asking for information about steps being taken to solve the problem. Further, we have had letters from one or two doctors indicating that either they or one of their patients are highly sensitive to penicillin, and in two instances these physicians believed they had evidence of serious reactions following ingestion of milk presumed to be adulterated with penicillin. It should be stated here, however, that at this time we do not have a single proved case of a reaction following the ingestion of fluid milk known to contain penicillin.

Following our second survey of the milk supply, opinions were obtained from some 30 authorities in the fields of antibiotic therapy, allergy, and pediatrics, concerning their views on the significance of these quantities of penicillin in market milk from a public health standpoint. The majority of these experts were of the opinion that these concentrations were unlikely to modify the oral or intestinal flora, cause the emergence of resistant strains, or provoke sensitization of an insensitive consumer. However, the majority felt that these concentrations might possibly cause a reaction in an exquisitely sensitive individual. The antibiotics used in mastitis preparations are mainly penicillin, streptomycin, bacitracin, neomycin, polymyxin, oxytetracycline, and chlortetracycline. The evidence seems to be that the broad-spectrum antibiotics are poor sensitizers, as are neomycin and

streptomycin by mouth. Both bacitracin and polymyxin, being polypeptides, are poor sensitizers also. Our major concern is with penicillin.

Although it is possible that penicillin has been added to milk illegally to lower bacterial counts, we have felt from the beginning that the presence of penicillin in milk is caused mainly by the producer sending milk to the dairy sooner than 72 hours after treatment of the mastitic cow with the antibiotic preparation. Although the very great bulk of the antibiotic is eliminated in the first few milkings following treatment, small increments of antibiotic may be demonstrated for relatively long periods of time. The finding of antibiotics in milk and the possible unauthorized use of antibiotics as food preservatives provoked the publication by the Secretary of the Department of Health, Education, and Welfare on February 25, 1953, of a statement of policy which, in essence, stated that the addition of antibiotics to foods either directly or indirectly constituted adulteration.

For the past several years certain antibiotics, penicillin, chlortetracycline, bacitracin, and oxytetracycline, have been used to stimulate the growth of chicks, poults, and swine. These drugs are used in feed in concentrations of from 5 to 20 ppm. Carefully controlled studies in our own and in other laboratories demonstrate conclusively the absence of antibiotic residues in these farm animals fed in this manner. In some cases higher concentrations of antibiotics are utilized (50–200 ppm) for prophylactic or therapeutic purposes in chickens and poults. Residues may be demonstrated in the blood and tissues of these animals while being fed these higher concentrations. However, the drugs are rapidly excreted, disappearing from both blood and tissue within a few days after the animals are placed on nonmedicated feed. The use of antibiotics as just described under normal marketing conditions does not, in our opinion, constitute a public health problem.

In November, 1955, the Food and Drug Administration under the Miller Amendment approved the use of chlortetracycline in the processing of poultry. This drug acts as a preservative extending the shelf-life of such processed birds. Under this amendment the applicant must demonstrate "utility" to the satisfaction of the Department of Agriculture and "safety" to the Food and Drug Administration. In the process the clean dressed bird is immersed in a tank of ice water containing 10 ppm of chlortetracycline, usually for a period of two hours. The tolerance established was 7 ppm in any part of the bird, the "part" consisting of its normal complement of skin, fat, muscle, and other tissue. The application for this use of chlortetracycline was under consideration and study for over three years before final approval. It was not until conclusive scientific evidence was presented that the drug could not be found in the "cooked" bird—be it by broiling, frying, boiling, or baking—that a final tolerance was established. Recently, the same tolerance was established for oxytetracycline for similar uses.

Antibiotics are in use in the treatment of prophylaxis of plant diseases. Both streptomycin alone and streptomycin and oxytetracycline combined are marketed for apple, pear, and walnut blight. Successful studies have been reported in the control of halo blight of beans and bacterial diseases of tobacco, tomatoes, peppers, cherries, and potatoes. Here, too, there seems to be no public health problem involved, since none of the drugs used reach the final consumer, all being dissipated before the fruit or vegetables are eaten.

A considerable number of investigative studies of the usefulness of antibiotics in the preservation of fish and meats have been completed. The evi-

dence is quite substantial that these drugs will extend the shelf-life of these important food products. However, approval of such use by the establishment of tolerances under the Miller Amendment can be obtained only when conclusive evidence is presented that such use will not endanger the public health.

On September 10 of last year a Medical Advisory Panel accepted the invitation of the Commissioner of the Food and Drug Administration to consider the public health problems involved by the presence of antibiotics in market milk.* In addition to the panel, representatives of the American Drug Manufacturers Association, Associated Veterinary Laboratories, Animal Health Institute, Department of Agriculture, Food Protection Committee of the National Research Council, Milk Industry Foundation, American Medical Association, Public Health Service, American Veterinary Medical Association, California Creamery Operators Association, and the Food and Drug Administration were present.

Following the all-day session, during which the problems involved were discussed thoroughly, it was apparent that our main health problem is concerned with penicillin to the exclusion of the other antibiotics that are used in mastitis preparations. It was the consensus of the panel that antibiotics, such as the tetracyclines, bacitracin, polymyxin, and neomycin, all of which may be found in mastitis preparations, do not pose a public health problem, even though they may find their way into market milk.

It was agreed that penicillin is a highly active antigenic substance and, even in the very small concentrations found in milk, might well cause reactions in highly sensitive individuals. It was apparent that the latter individuals are most concerned with this public health problem and that they constitute something less than 10 per cent of the population. It seemed certain that reactions could occur in these individuals of varying intensity from mild transient ones to possibly serious ones, the serious reactions occurring in those individuals "exquisitely" sensitive. Because scientific proof is essential, it was the consensus of the panel that further studies were necessary with highly sensitive human volunteers to determine whether or not the ingestion of milk containing those concentrations of penicillin now found in market milk would cause allergic manifestations. Two of the panel members, Drs. Feinberg and Siegel, in collaboration with the Food and Drug Administration, will carry out such studies.

Although it was recognized by the conference members that penicillin could be added illegally to milk as a means of lowering bacterial counts, it seemed obvious from the discussion that penicillin was reaching the milk supply primarily through the improper use of mastitis preparations for the treatment of infected dairy animals. Although, as noted previously, the labeling of mastitic preparations carries a warning to the farmer that milk from treated cows should not be sold for human use for three days after the last treatment, it is his failure to follow these instructions in some cases that causes the major adulteration of the milk supply. Furthermore, this warning appears in the labeling but not on the label of each preparation. It seems advisable, in order to carry the warning more directly to the user, that it be placed prominently on the label of each mastitis preparation

* On the advisory panel were: Wesley W. Spink, M.D., Chairman, University of Minnesota; Harry F. Dowling, M.D., University of Illinois; Samuel M. Feinberg, M.D., Northwestern University; Chester S. Keefer, M.D., Evans Memorial Hospital; Perrin H. Long, M.D., State University of New York; Walsh McDermott, M.D., Cornell University Medical College; Robert Popper, M.D., Veterans Administration; and Bernard B. Siegel, M.D., Jewish Hospital of Brooklyn.

container. Steps are now being taken to make the necessary amendments to the antibiotic regulations.

During the past few years the Department of Agriculture has been concerned with the problem of antibiotics in milk because of the interference of these drugs with cheese-starter cultures. In their studies they have been able to demonstrate that certain dyes incorporated in mastitis preparations will color the milk from such animals so that it is readily recognized as being from an infected animal. Considerably more work has to be done in this area. If a satisfactory dye is found, it may be quite advisable to require by regulation that it be added to all mastitis preparations so that for several milkings after treatment the milk will be distinctly colored and therefore unfit for use as market milk.

It is quite likely that milk producers do not recognize the possible danger to the public health that is associated with the adulteration of market milk with antibiotics. It is likely also that the warning, which now appears in the labeling of these preparations, has not been brought forcibly home to milk producers. Actually, milk from infected cattle is adulterated, per se, because of its content of pus and bacteria, and the milk shipped to the market too early after treatment of the cows with an antibiotic preparation is doubly damned because of the presence of both antibiotic and evidences of infection. It is quite possible that the public health problem involved here may be considerably reduced by a strong educational program directed to those who are responsible for the production of market milk. It was the consensus of the Medical Advisory Panel that an educational program of considerable magnitude may be helpful in at least partially alleviating the situation.

In closing, it should be emphasized that the problem of contamination with antibiotics in our foods and particularly in milk is a small one compared to our other current food safety problems which have arisen in large part as a result of technologic progress in food production, processing, and distribution. In the processing of food, preservatives, antioxidants, colors, bleaches, flavors, coatings, drying agents, moistening agents, thickening agents, sequestering agents, "aging" agents, stabilizers, emulsifiers, neutralizers, acidifiers, and sweeteners are utilized. In production and processing of food, new equipment cleaners, sanitizers, lubricants, surfacing materials, and alloys composing the equipment itself may all contaminate the food processed. In distribution, food packages which incorporate new plastics, enamels, films, plasticizers, antioxidants, catalysts, and coatings are further potential sources of food adulteration.

These agents utilized in processing, production, and distribution of foods may be inherently toxic and may have an accumulative effect, and combinations of them may have synergistic toxic effects—in short, the problems involved with such agents are enormous. As noted above, the case of penicillin in milk is a minor problem by comparison. Penicillin is a relatively atoxic substance and may be taken by nonsensitive individuals in enormous concentrations. Our problem with penicillin, it should be repeated, is related to a relatively small proportion of our population, namely, those unfortunate individuals who have become sensitized to the drug. Nevertheless, milk is consumed by the strong and the weak, the old and the young, the well and the sick, and the allergic and the nonallergic individual. Even though the adulteration of milk with penicillin may affect only a small percentage of the population, this percentage can represent several million people all of whom must and will be fully protected from adulterated food under the Food, Drug, and Cosmetic Act.

Certain Real Problems in the Development of Community Programs for the Medical Care, Education, and Training of the Mentally Retarded

WARREN T. VAUGHAN, Jr., M.D., F.A.P.H.A.

Solutions for five difficult administrative problems offered here stem from a broad field experience in this troubled area of new but wide public health interest.

Several years ago in Massachusetts, as in other parts of the country, new legislation was enacted as a result of the urging of the Association for Retarded Children and other interested groups. These laws provide for adequate community programs for the special education and training of retarded children.

The new legislation sets up state subsidized special-class programs for the educable retarded and trainable retarded children in every community and makes it mandatory that each school system provide special classes whenever there are five or more such children in a given community. In June, 1956, there were 131 communities conducting special classes, with 520 educable and 81 trainable classes. There were 7,282 children enrolled in educable classes, 756 in trainable classes. In all, there were 574 teachers of special classes in the state.

The Massachusetts Departments of Education, Mental Health, and Public Health met for 18 months during 1954 and 1955 in an interdepartmental committee to develop regulations for screening, study, and placement of children in special education. Heretofore, the screening and study of children for placement in special educational facilities were carried out under regulations developed in 1919, when the Binet intelligence test was first introduced into Massachusetts on a large scale. The 1919 system provided for a group of so-called traveling school clinics comprised of psychiatrist, psychologist, and social worker who visited, on request, each year various school systems to examine within the school itself children referred to it by the school superintendent. Reports and recommendations were prepared and returned to the superintendent.

The Department of Mental Health had practically abandoned its traveling school clinic program during World War II because of the shortage of personnel and had, since 1947, been planning with many groups for a revision of the screening program. A system of mental health centers was introduced in Massachusetts in 1952, with mental health consultation services available to school systems and diagnostic services available to children and parents in the community.[1] By 1956 there were 16 such mental health centers established in the state, with several more planned for the coming years.

Since 1919 two developments in schools had occurred which made it particularly unrealistic to continue the traveling school clinic pattern; first, the development of school health programs with school physician services, periodic physical examinations, school nursing with its close contact with parents and

family physicians, and second, the development of school psychology with testing and guidance programs available within school systems themselves. Most schools handled their special class placements by themselves. Furthermore, studies carried out in the late forties in the largest traveling school clinic showed that 85 per cent of the children referred for questions of special class placement were not "retarded" according to the medical concept of retardation, but had behavior disorders, learning disabilities, psychoneuroses, personality disorders—problems for a child guidance clinic or mental health center.

The traveling school clinics were serving more as administrative and technical aids to the school administrator, rather than as medical services to the child and its parents, and were impeding the development of school psychology in Massachusetts. The clinics performed three basic operations—the physical examination of the child, the psychometric examination of the child, a sociopsychiatric study of the child and the family. The Department of Mental Health recommended to the interdepartmental committee that these three functions be divided: (1) physical examination to be performed, on referral, by the family physician or by special clinic facilities, such as pediatric or neurologic clinics, or, in lieu of these, by the school physician; (2) that the basic psychometric screening examination be administered in the school system itself by a qualified school psychologist, approved for administering such examinations by the Department of Mental Health; and (3) that the sociopsychiatric evaluation of the child be made by the mental health center or by other psychiatric services as desired by the parent, with the mental health consultant from the mental health center available to the school administration to review and evaluate findings of the school concerning each child. The responsibility for declaring the child educably or trainably retarded—in other words, for placing the child in school—should be entirely the superintendent's.

This new system went into effect in 1955, along with the mandatory provisions of the new law that school systems should determine how many children there were in need of special education or training and should provide classes for them.[2] This new plan had many advantages over the old system. First, the medical relationships with the child and parents were removed from the school administration setting, so that the parents might have a private medical relationship within which to examine the problem, air and work through the many difficult feelings and attitudes which accompanied their problem, and to plan realistically for the future of their child. Second, the basic screening instrument, the intelligence test, is in the hands of educators, who use it widely to determine the most appropriate curriculum and teaching approach for all school children. Test findings in the school setting can be correlated with findings of clinical studies and their implications for the educational and other needs of the child discussed and reviewed with the school by the mental health consultant. The new plan brings together many people who are concerned from various points of view with the particular child—the school teacher, school nurse, school psychologist, school administrator, family physician, mental health center, various community agencies, and the parents.

During the two years of experience

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with this new plan many serious problems have come to light which impede development. Some of these have recently been described in a report of the spring (1956) meeting of the Northeast States Government Conference on Mental Health.[3] There are five problems which seem most in need of study and solution.

The first problem is that there is a general confusion concerning the conditions that are embraced by the term "mental retardation." The recent study by Gruenberg, et al., in Syracuse highlights the confusion, indicating to us that different groups of professional people from education and health are indeed counting different types of disorders, labeling them all "mental retardation."[4]

The intelligence quotient, derived from whatever source, can serve only as one factor in the differential diagnosis, study, and planning for a particular child. The early notion that intelligence quotients are distributed on a normal distribution curve through the population results in tremendous confusion, such as publication of statements that 3 per cent of the population is "mentally retarded."[5] In Massachusetts this results in statements that there are approximately 60,000 mentally retarded in the state. These figures are of little practical use to the administrator and are indeed misleading to the public, which assumes there is a distinct medical entity known as "mental retardation." Actually, the National Association for Mental Retardation in its literature states that there are at least 70 distinct medical disease entities which may have as one of their accompanying factors a condition of "mental retardation."[5]

The problem of definition becomes particularly important when we consider the large group of so-called educably retarded children, children who score I.Q.'s in the borderline range. Many of these children are recognized by the trained child psychiatrist or pediatrician to have clearly defined diseases and deficits on an organic or emotional basis or both. Others, however, are showing learning disabilities and deficits in functioning on intelligence testing which, however, does not represent their true intellectual potential. This is well recognized in child guidance clinics where the clinical psychologist frequently reports that the child is functioning below his true capacity.

Changes in intelligence test scores are commonplace in child guidance clinics, as emotional factors and others, including hearing and seeing deficits, are corrected. Nevertheless, those who administer programs of special education for retarded children cling to the test score as their justification for decisions concerning the school placement of the child. In the average special class program, the casual observer will see more striking differences between the trainable and educable groups than between the educable group and a class of "normal" children of the same age. We are not so concerned with the problem of definition in the trainable area, where we are dealing with children who have extremely severe physical, mental, and emotional handicaps.

We have tried to tackle this problem administratively in Massachusetts by defining community programing as not for "retarded children," but for children "in need of special education." A superintendent has to declare whether first, a child is in need of special education and, second, whether the special education is of the educable or trainable variety. This is without reference to intelligence quotient, per se; nevertheless, intelligence quotients still remain the main determinants of these decisions. The following case illustrates how this problem of definition of mental retardation affects the individual child.

This example doubtless can be multiplied many times in Massachusetts as it can be elsewhere.

A physician referred a 14-year-old boy to the Mental Health Center in June as a last resort. The youngster had been progressively unable to learn in school, had been the previous year placed in a special class program following testing in the school which revealed an I.Q. below 80, which the school administrator was using as a definite indicator of "mental retardation" and need for special education. During the year the child was very unhappy, feeling discriminated against, the butt of ridicule in the neighborhood.

The parents were extremely anxious, overprotective, convinced that the experience in the special class, where, as the boy stated, he was with children that were "different," was, in fact, impeding his progress. Conference with the school administration in June, when the boy was reassigned to the special class for another year, resulted in a tremendous emotional upset on the part of the boy and the parents. At that point, they consulted their family physician who referred them to the Mental Health Center.

At the Mental Health Center the youngster was seen to be an anxious, inhibited child who was unable to tell his story either in the presence of his mother or alone. He did state that he knew he was not like those other children in the class, said that he had not learned anything during the year, and spoke of his embarrassment. He drew pictures for the doctor. The pictures were not those of a mentally retarded child, but those of a neurotic child with anxiety and inhibition. Psychologic tests, conducted in a nonthreatening atmosphere after a friendly relationship had been established, revealed an average intelligence in a youngster with an overwhelming anxiety reaction and a learning disability.

The functioning of the youngster in the test situation previously given in the school is understood only in relationship to his emotional difficulties. The child is obviously in need of special education, but is not "mentally retarded." Certainly he is retarded in his functioning in school situations which other children are able to handle successfully. We cannot criticize the school, for in fact, from their point of view, the child is "retarded," based on the school's standards and expectations, and the test performance in the school situation.

This leads us to a second overwhelming problem in this field; namely, there is little or no attempt to apply sound knowledge of emotional and cultural factors in the growth and development of children to the field of the mentally retarded. This may seem like a sweeping statement, but nevertheless it can be documented in Massachusetts. There is as yet little application of modern child psychiatry to this field. We are beginning, as exemplified in the previous example, to bring in modern child psychiatry and psychiatric casework, making these available to school people, parents, children, and others concerned with this problem.

There is a striking absence of modern social casework in this field. We are dealing, obviously, with chronic disease and should have centers for chronic care of these children, focusing on the role of the parents in child management, realizing that growth and development of these children take place in slower, altered fashions. There is a crying need for good, solid, family casework programs. If we studied our populations in state schools in the higher I.Q. ranges, we would find these children are in state schools more because of family disorganization and disintegration than because of the particular intelligence test score which the children exhibit. Of course, the state schools began originally

as an effort to provide special education and training technics for children in need of them and who are able to profit from them. The state school populations are changing now, becoming filled more with severely damaged children in the extremely low I.Q. ranges.

A further example of how this lack of appreciation of emotional factors may influence the whole approach to special education is presented in the following case: A shy, anxious little girl who scored an I.Q. of 74 had failed to learn during the previous school year. On consultation with the Mental Health Center, it was decided that this girl could profit from special education. It was fully recognized that the child's emotional difficulties were hampering her performance. It was felt that the special attention that she would receive in the small class would be of help to her. The child began special class, the mother reporting that the child was coming home from school for the first time in her life happy and really looking forward to the next day. The child's self-confidence began to develop and her performance improved.

In the middle of the year, the school psychologist retested the child, found the child performing at an I.Q. level of 88. From the Mental Health Center's point of view this demonstrated that the special education the child was receiving was indeed beneficial to her. However, the school administrator became extremely concerned that a mistake had been made in placing the child in the special class in the first place inasmuch as she was scoring in the high 80's. Second, he was concerned whether the child should at this point be transferred to her regular class inasmuch as she was not "mentally retarded." The mental health consultant focused on the needs of the child the fact that the special class program was obviously beneficial to the child and treated the issue of "mental retardation" as an issue quite irrelevant to the child and only of concern obviously to the administrator.

The anxiety of the school administrator and resultant tendency to rigidify the special education program results stem in part from a lack of knowledge of the importance of emotional and cultural factors as they affect the performance of the child. The mental health consultant serves an important educational function in his work with the school system as he helps them plan for the individual child.

With "special education" a function of the public schools and medical care a function of health agencies and physicians, we are faced with the third problem in community programing. It is unclear who is responsible for the professional care of the retarded child. This seems to result from the fact that we have not decided whether we are dealing primarily with a medical problem or an educational problem.

To whom can the parents turn when concerned with the growth and development and the performance of their child? Ordinarily the parents will turn to their family physician. He is busy and obviously proper attention to these problems takes a lot of professional time, not only in study of the child but most important, in orientation, education, and casework with the family. Who is going to take the responsibility for the long-range supervision of the growth and development?

We do not have any special agency set up in Massachusetts today for this purpose. The state schools might develop outpatient clinic facilities, providing medical supervision much as has been developed successfully in the care of chronic illnesses, such as rheumatic fever, orthopedic diseases or cerebral palsy. There is tremendous resistance to developing such services inasmuch as the state schools are overwhelmed with problems of internal organization, staff deficiencies, etc. There is, as mentioned

above, a serious lack of social workers trained in modern casework who are interested in this field.

The best illustration of the seriousness of this problem in Massachusetts comes from the direct experiences of the parent groups themselves and the Associations for Retarded Children. These are developing rapidly; in certain communities some are functioning as Parent-Teacher Associations to special education programs, while others are concerned with the development of diagnostic centers, preschool nursery schools for retarded children, day care, summer camps, and sheltered workshops for older retarded children. The parents' group is gradually developing an intense feeling of frustration because as they move from group to group, from the educators to the physicians, to public agencies and private agencies, trying to get programing started, they get "the run-a-round." It seems to us that the reason for this is that there is a lack of clarification as to which agency is responsible for over-all programing.

Responsibility is defined by institutional functions. The superintendent of each state school is responsible for the children in his charge, the patients—and we use the word "patient" here not feeling sure that all children in state schools are commonly referred to as "patients." Public school superintendents are responsible for the students in special education programs. They wonder if it is correct that they should be responsible for the trainable group of children who are so damaged and so many of whom will eventually be institutionalized. "Is this a proper function of a public school system?", ask many superintendents with some justification, based on experience with groups of these extremely damaged children.

Another reason for the lack of programing and the frustration of the parents' group is the fourth problem we face; lack of trained personnel—professional people to do the job in the community and a lack of a body of sound knowledge and established practices which can be shared by professionals from the various disciplines and which can serve as guides for further research. Obviously, the field of mental retardation is a special field, but at the same time it demands the cooperative work of people from many more generalized fields, such as child psychiatry, pediatrics, education, occupational therapy, psychiatric social work, research physiology, and biochemistry. Obviously, the lack of trained professionals may be part of the general lack of trained professionals in the health and education fields. This is a serious problem and demands development of recruitment and training programs throughout the states.

Development of such programs for the field of mental retardation is currently tremendously hampered and will undoubtedly continue to be so by the fifth and, in some ways, the most serious problem in this field—the firmly entrenched attitudes and assumptions concerning mental retardation, in both the public and professional communities, which slow the development of adequate programs and impede treatment and research. Retardation is closely linked to failure and attitudes of repression and avoidance are commonplace when it comes to failure. There are, as well, fears of being influenced in a demonologic fashion by exposure and contact with retarded children.

The field has a very low status ascribed to it by the community and by professionals. People in the field are thought often to be inferior themselves, both within the education and medical professions. The concept of mental retardation is intimately related to expectations of the community within which the child is functioning.

All our attempts to develop epidemiologic studies of mental retardation point

to this fact, as published prevalence rates of mental retardation are highest in the school-age child, the problem for all practical purposes disappearing when the child is outside of the educational system. Mental retardation is less a medical entity than it is a sociocultural designation. In this sense it poses for the mental health people a problem somewhat similar to that of the designation, "juvenile delinquency," which is not a medical designation but a legal designation.

Not until we are able to redefine the problem using modern concepts of growth and development, both physical and emotional, combining knowledge of pediatrics, neurology, the learning process and psychopathology, can we remove this problem of low status ascribed to the field and enable professional workers to approach the problem of mental deficiency with firm and forward-looking programs of community education, care and treament of retarded children, and research programs which will point the way to the ultimate control of the problem through increased knowledge and preventive measures.

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Sanitary Engineer Certification Deadline Extended

The deadline for submitting applications for certification by the American Sanitary Engineering Intersociety Board under the "grandfather" clause has been extended from July 1 to October 1, 1957. Until that date, applicants who meet the basic requirements of graduation from an acceptable college of engineering, registration as a professional engineer, 15 years of acceptable sanitary engineering experience and who have attained recognized prominence in the field, may be certified without examination at the discretion of the Board. After that time applicants must take a written and oral examination. Application forms and further information from the Secretary, ASEIB, Room 1601, 33 West 39th Street, New York 18.

Japanese B Encephalitis

COLONEL W. D. TIGERTT, MC, USA, and LT. COLONEL TRYGVE O. BERGE, MC, USA

This is the third presentation of "Controlled Vaccine Field Trials." The fourth paper of the symposium will be published next month.

This symposium has among its aims the consideration of problems and difficulties in the conduct and interpretation of large-scale field tests. It is from this point of view that one phase of an endeavor to evaluate a vaccine against Japanese B encephalitis (JBE) will be presented. This program, conducted in Japan from 1946 to 1950 inclusive, is the work of many people. An effort to recognize the individual workers has been made in other publications.[1-4]

A vaccine against JBE was developed initially by Sabin who defined the desirable characteristics of such a preparation and devised a method of potency assay in mice. This original vaccine, a formalinized-mouse brain product, was used in American troops through 1946. In 1947 a formalin-inactivated product prepared in embryonated eggs by Smadel was introduced and was employed during the next several years. Both were demonstrated to be immunogenic in laboratory animals and with suitable dosage both were known to produce neutralizing antibodies in a high percentage of Japanese children previously devoid of such antibodies.

Although JBE is now a fairly well known entity, certain specific aspects which bear directly on the problem of vaccine evaluation warrant review. JBE is a member of the family of arthropod-borne virus diseases and has a sharp seasonal occurrence in countries in the temperate zone. The human disease is not considered to be an essential part of the ecologic cycle. In some instances encephalitis is a part of the infection complex, but for every case of actual encephalitis there are numerous symptomless or "inapparent" infections. In the indigenous population of an endemic area the incidence of encephalitis is highest in children less than 10 years of age and various surveys have shown that the majority of Japanese adults living in endemic areas have neutralizing antibodies for the JBE virus.

During the late summer months these inapparent infections, manifested by the development of neutralizing antibodies, as well as complement-fixing antibodies, may occur in the absence of associated clinical cases of encephalitis. It must therefore be presumed, particularly for purposes of vaccine evaluation, that there may be an annual dissemination of the virus. It is well to make the point here that at the time of initiation of this program opinions were diverse as to the annual dissemination of the virus and that proof of this was accumulated as the study progressed.

It is usually considered that absence of JBE neutralizing antibodies indicates a lack of previous experience with JBE or related viruses. In the pilot studies some doubt was cast on this assumption

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This study was made at the Virus and Rickettsial Diseases Section, 406th Medical General Laboratory, APO 500, San Francisco, Calif.

when neutralization indexes were observed to result from a single dose of vaccine administered to children known to have possessed no antibodies prior to vaccination. This has not been checked in a nonendemic area so that it cannot be determined whether this is a primary response to an antigen, or whether this is indicative of a previous experience which was not in itself sufficient to provoke a lasting level of neutralizing antibodies. It is introduced at this point to establish another of the problems faced in evaluating the true initial immunologic status of an indigenous population.

Under these circumstances it is clear that the main potential value of such a vaccine in the young-age group would be the reduction of clinical encephalitis. The specific question can be stated thus: If a killed vaccine is administered to children in an endemic area where the incidence of natural inapparent infections is sufficient to immunize almost all inhabitants before adulthood is reached, does such vaccine administration: (1) Cause a decrease in the number of cases of clinical encephalitis? (2) Enhance the natural immunization procedures? (3) Interfere in any way with the natural immunizing effects of such inapparent infections?

Methods

To study these points a program in young children was initiated in Okayama Prefecture (central Honshu), Japan. This area was selected by our Japanese confreres because it was expected to produce some cases of frank encephalitis each year and the population was relatively stable. During the early summer months of 1946 some 15,800 children in 68 localities in Okayama were given the complete series of three 1.0 ml dose of the mouse brain vaccine. This group constituted about a third of the total population of this age group in these communities. In 1947 an intracutaneous recall dose of 0.1 ml of chick embryo vaccine was administered to 13,260 of this same group. In 1948 and 1949 the program was expanded, continuing to give boosters and to include newly vaccinated individuals each year. In 1948 and 1949 the initial series was three 1.0 ml chick embryo-type vaccine injections, while the boosters were 1.0 ml of the same product. The over-all program is summarized in Table 1 and it will be noted that the age groups broaden with each additional year. By 1949 the total study group numbered 140,700, ranging in age from five to 10 years, and was situated in 162 localities. This number represents half the total children of this age group in Okayama Prefecture. Those who had received the complete schedule of vaccine are counted in the numerators. The total population in the study areas of the proper age group forms the denominators of the fractions in the table. To say this in another way—in Table 1 the denominator is based on the census and school rolls in each locality and includes the vaccinated, the incompletely vaccinated, and the nonvaccinated. Using these terms then, over the four-year period the study group comprises 289,900 "child-years" of exposure with 108,900 "child-years" falling in the completely vaccinated category.

Arrangements were made to see and study all reported cases of JBE in the areas containing vaccinated individuals. There is no need to dwell on language difficulties, or the problems of dealing with seriously ill children and their families, the poor road network, or the numerous false alarms which are a part of any such program. Cases were accepted as JBE when the clinical picture was appropriate and when accompanied by a serologic change in successive blood samples. In the fatal cases this serologic support was not available and these had to be accepted on clinical

Table 1—Japanese B Encephalitis Vaccination (Okayama)—Total Program to Nearest Hundred

Category	Year / Age Group	1946 (4–6)	1947 (5–7)	1948 (5–9)	1949 (5–10)		Total
Original		15,800	..	14,200	33,700		
Original plus one booster			13,300		12,000		
Original plus two boosters				11,000			
Original plus three boosters					9,000		
Total vaccinated		15,800	13,300	25,200	54,700	=	109,000
Total population in age group		43,300	44,600	61,300	141,000		290,200

grounds only. During 1946, 1948, and 1949 experienced American and Japanese observers saw all suspect cases.

Results

During 1946 no cases of encephalitis occurred in the age group under study. Bona fide cases in appropriate age groups and geographic areas were identified in the remaining years. Table 2 shows the vaccinated and total population in those localities where one or more cases of encephalitis occurred in the age group under study. Thus, although in 1949 the total vaccinated group numbered 54,700, the disease was not recognized in the age group being studied in localities containing 65 per cent of the vaccinated, and these entire groups have been eliminated from Table 2, therefore, as not being at risk. Thus, in retrospect, two-thirds of the original study group was to be discarded.

The actual case incidence per year is shown in Table 3, but deserves further clarification. In the 40 cases observed in 1947–1949 only rarely did more than

Table 2—Japanese B Encephalitis Vaccination (Okayama)—Effective Program, i.e., Population Groups in Which Cases Occurred

Category	Year / Age Group	1946 (4–6)	1947 (5–7)	1948 (5–9)	1949 (5–10)		Total
Original		..		8,590	7,395		
Original plus one booster			1,987		5,094		
Original plus two boosters				4,618			
Original plus three boosters					6,226		
Total vaccinated		..	1,987	13,208	18,715	=	33,910
Total population in age group			13,212	37,601	46,265		97,078

Table 3—Japanese B Encephalitis Vaccination (Okayama)—Rates

Category	Year / Age Group	1946 (4–6)	1947 (5–7)	1948 (5–9)	1949 (5–10)		Total
Total cases		0	6	15	19	=	40
Total population		0	13,212	37,601	46,265		97,078
Rate/100,000			45.4	39.9	41.0		41.2
Cases in vaccinated		0	0	1	3	=	4
Total vaccinated		0	1,987	13,208	18,715		33,910
Rate/100,000			0	7.6	16.0		11.8
Cases in unvaccinated		0	6	14	16	=	36
Total unvaccinated		0	11,225	24,393	27,550		63,168
Rate/100,000			53.4	57.4	58.1		57.0

Rate for reported cases in the 5 to 9-year age group in Tokyo "epidemics" — 1935— 83.6; 1948—117.3

one case occur in any given geographic area. Thus, there is no evidence, based on case occurrence, that exposure of the various members of each group was identical. However, using this method of accumulation, the case rate in the nonvaccinated ranged from 53.45 to 58.07 per 100,000. These consistent annual rates compare favorably with rates of 83.6 and 117.3 per 100,000 in the five to nine-year age group observed in Tokyo during the 1935 and 1948 "epidemics"—when it is appreciated that these latter rates were based on reported, not verified, cases. It is tempting to make the assertion that JBE occurs in some areas of Japan annually at a rather constant rate with the cases reaching "epidemic" proportions only when densely populated areas (urban) are involved.

It will be remembered that the "nonvaccinated" category also includes the incompletely vaccinated. Since this small percentage contributed no cases to the total considered in Table 3, their elimination would simply serve to increase the observed case rates in the "nonvaccinated" category.

A breakdown of the cases shows that in the nonvaccinated there were 17 males and 19 females. The four cases occurring in the vaccinated group were males. The clinical course of the disease in the vaccinated was not modified perceptibly. Three of the cases occurred in the year in which the children had received their initial vaccination and one in the year in which the first annual booster was given. This appears to be in keeping with the difference in serologic response observed following initial and recall vaccination. Following initial vaccination rarely do more than 75 per cent of the group of children show positive neutralization indexes. These are low and part disappear over a period of months. Following a recall dose a year later, the positives frequently exceed 90 per cent, and the titers are higher and appear to be more persistent. Similar data have been obtained in American adults.

With these points in mind reference

again to Table 3 will show that case rates in the vaccinated were consistently less than in the nonvaccinated. It is not believed that a more refined method of statistical presentation is warranted. The actual observed cases of disease were few and the consistency of the trend over three years is perhaps of more significance than the total case figures. Parenthetically, it should be noted that the well known bonus effect of vaccination observed in diseases with man-to-man transmission, resulting from a decrease in the exposure rate of the group by reducing the number of susceptibles, does not play a part in the evaluation of JBE vaccine.

The incompletely vaccinated may be examined in an effort to gain information about possible adverse effects. Of the children chosen to receive the initial immunization during the four years, 10–15 per cent did not complete the full series of three doses. Only one case of encephalitis is known to have occurred in this group. This was in 1949 in a seven-year-old boy who had received two doses of vaccine, the last 12 weeks prior to the onset of fatal encephalitis. Since there were no other cases in the village in which this child lived, these data were not included in the tabular presentation. During 1949 there were 845 children who had not completed the initial immunization in the areas where cases occurred.

During the four years no cases were observed in any individuals who had received the complete initial vaccination, but who did not receive the annual boosters. Some of these were lost to the program by deaths from other causes, or by movement from the area; but a substantial number remained and some were presumably at risk each year. In 1950, after all vaccination had been suspended for one year, the reported case incidence in the previously vaccinated was identical to that observed in previous years, remaining considerably lower than in the nonvaccinated. These findings, coupled with the difference in case rates between the vaccinated and nonvaccinated, appear to provide an answer to one part of the original question, i.e., that vaccine administration to Japanese children in Okayama Prefecture does not have an obvious adverse effect in case incidence, either initially or after cessation of the program.

Various serologic surveys were undertaken to give an indication of the effect of vaccination on the natural immunization process. In interpreting the findings it must be appreciated that the acquisition of neutralizing antibodies by a population group in Okayama does not occur in a single season, but over a period of years due either to a need for repeated infections, to age factors, or, most probably, to the per annum rate of exposure. It is sufficient to state that the vaccinated groups rather consistently had a higher percentage of individuals with positive neutralization indexes than did the controls. This difference was magnified in proportion to the number of annual boosters that had been received.

Discussion

Within a geographic area limited so as to hope for a minimal variation in ecologic factors, with a limited quantity of vaccine available each year to use, with from zero to 30 cases expected each year in the age group under study, and with a known natural immunization process in operation, can meaningful data on the immunogenic capacity of a product be obtained by the operation of such a program over a period of several years?

In terms of the null hypothesis it seems logical to expect that lack of effectiveness should be readily recognizable under such conditions, providing the study groups do not contain an element of bias in their selection. That

such may be the case in this study must be recognized. In 1946, for example, the death rate from all causes for a three-month period was several-fold greater in the nonvaccinated than in the vaccinated. The cause of this is not known. The method of selection in 1948–1949 was random choice from school rolls. Various checks during these two years, during which most of the cases were accumulated, did not reveal a continuance of this bias, and the problem is no different in this approach than it is in any type of vaccine trial.

A low and variable exposure rate per year is a part of the over-all problem in dealing with the arthropod-borne encephalitides. This also occurs during "epidemic" periods. In Tokyo in 1948, based on reported cases, the case-rate for various governmental subsections of the city varied from 17 to 256 per 100,000, although the over-all rate agreed fairly well with the data available from the "epidemic" of 1935.

So far as demonstrating effectiveness of the killed vaccine is concerned, the answer is much less evident. With the small number of cases the figures for any single year could well be explained on a chance basis. However, the reduction was obtained consistently over a three-year period. Further, this consistent decrease in rate of incidence of encephalitis in the vaccinated was associated with a change in their serologic status in a direction thought to be associated with protection.

As a part of a symposium in problems associated with vaccine field trials, this presentation is intended to raise the question of the significance to be attached to consistent differences noted over several years, even though the cases per year are relatively few and in large population groups.

Summary

The administration of a killed JBE vaccine to children residing in an endemic area and experiencing inapparent infections had no obvious adverse effects. There was a fivefold decrease in case rates in the vaccinated, as compared to the nonvaccinated controls. Although the cases were few in number, the annual reduction was consistent over a three-year period.

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The Public Health Laboratory in the Community Control of Heart Diseases

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Five tests that public health laboratories might perform to further the medical care and control of heart disease are suggested here.

To consider public health laboratories in terms of the control of cardiovascular diseases presupposes more than mere interest. Each laboratory has a responsibility for active attempts to utilize all its resources to help control and solve this paramount health problem. The past half-century has seen the functions of public health laboratories broaden greatly. An examination of their functions as now performed should serve a useful purpose before attempting to describe their specific utility in the control of cardiovascular diseases.

We would like to make clear, frankly, that we speak only as observers, since neither of us has worked in such a laboratory for an appreciable period. As reporters, the first function we see is the provision of laboratory services to aid physicians—both in organized public health services and in private practice—in the diagnosis, prevention, and management of disease. In fact, this appears to be the main objective of all public health laboratories. All other functions, while important, seem to be part of a program leading to this objective.

A corollary function we observe is the maintenance of standards. Performance of a laboratory test is not synonymous with provision of a real diagnostic tool. It is necessary to have tests which are accurate and reproducible before their true value will be realized. Public health laboratories have pioneered the way in maintenance of standards for laboratory aids. The classic example of this is, of course, the serologic test for syphilis. When mass treatment of syphilis became possible it was imperative that case-finding and diagnosis-confirming laboratory tests for syphilis be accurate and reproducible from laboratory to laboratory. The story is well known, so we will not dwell on it further.

There are many other laboratory tests, including several in the cardiovascular field, which are being used extensively by physicians to aid them in diagnosis and management of their patients. There is evidence of wide variation in the results of these tests when performed in different laboratories or in the same laboratory by different technicians. Yet little effort is being made to standardize them so that physicians will have reasonable assurance of the accuracy of reported results. It is quite conceivable that maintenance of standards will become an increasingly important function of public health laboratories as they

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develop their roles in the control of chronic diseases.

Training is the third function we observe being carried on by public health laboratories. One contingency for providing laboratory tests that are accurate and reproducible is the availability of well trained technicians. Moreover, good laboratory assistance accessible to all physicians practicing in any one area is dependent upon the supply of well trained and continuously trained technicians throughout the area. Where does the responsibility of providing such training lie? Should not public health laboratories carry their share of the burden of responsibility for seeing that their areas have the necessary supply of the type and quality of technicians needed?

A fourth function that has impressed us is the research conducted by public health laboratories. The products of this research have added considerably to our understanding of infectious diseases and have served to strengthen the laboratories. In fact, it appears to be difficult to sustain strong public health laboratories unless they include a group of individuals who have interest, competence, and opportunities in research. Without research public health laboratories tend to become strictly service organizations staffed predominantly by persons interested only in routine jobs.

There is a long distance between the discovery of a diagnostic test in the basic laboratory to its final addition to public health laboratories' armamentarium. Many tests discovered in basic laboratories and developed in clinical laboratories need modification, evaluation, and standardization before they can be useful and effective on a mass basis. Public health laboratories must play a role in this transition of a test from basic laboratory to mass use.

Furthermore, public health laboratories have played, and are playing, a very basic part in the epidemiologic study of infectious diseases. There is no reason why they should not play just as important a role in the epidemiologic study of noninfectious diseases. It is equally contributory to our understanding of noninfectious diseases to study them among people in the spot where they live as it is to study them in laboratories and hospitals. Public health laboratories are in a position to exert positive leadership in this activity.

In summary, then, we have been impressed, as we have looked on public health laboratories taken collectively, that they are functioning today in four major areas: provision of laboratory tests as aids to physicians in diagnosis; prevention and management of disease; establishment and maintenance of standards of tests; training of technicians; and conduct of research. There are probably other functions that we have overlooked but which are not essential to this discussion. We should now like to look at some procedures that have acquired importance in cardiovascular diseases and see how they can be related to the functions outlined.

Beta-Hemolytic Streptococci

Research over the past 15 years has established that the key to preventing initial attacks of rheumatic fever is prompt and adequate treatment of infections with beta-hemolytic streptococcal organisms which almost always precede such attacks. Research has also shown that subsequent attacks of rheumatic fever following the initial attack can be forestalled by a program of medication designed to prevent the occurrence of streptococcal infections of the throat. Application of this knowledge to the general population has created many problems.

One of the problems is the need for determining that any particular sore throat is or is not caused by infection with beta-hemolytic streptococcal organ-

isms. Many times the etiology of a sore throat can be deduced by clinical signs and symptoms. In more than a few instances, however, this can be determined only by culturing the beta-hemolytic streptococci from the throat. Treatment of a streptococcal throat with antibiotics cannot be discontinued at the subsidence of clinical symptoms if rheumatic fever is to be prevented. The full beneficial effect can be realized only if therapy is continued for a week to 10 days. This constitutes the crux of the problem—there is no need to provide evidence of streptococcal infection to induce the doctor to initiate antibiotic therapy of sore throat, he is quite likely to do so anyway, often, unfortunately, whether it is needed or not. But he does require justification for and, indeed, education toward its continuance long after all symptoms have subsided. Consequently, it is necessary for physicians to have available to them the means of obtaining accurate throat cultures. The provision of the means, although there are many difficulties yet to be overcome, should be quite a challenge to public health laboratories, particularly on a problem which is of such real public health significance.

Another problem is lack of knowledge concerning the epidemiology of streptococcal organisms and streptococcal infections in civilian populations. Recent studies have shown that at any one time a fair proportion of children have beta-hemolytic streptococci in their throats unrelated to illness. This raises the question, when a positive throat culture is found, whether this is a coincidental finding or the etiologic agent causing disease and what are the odds it is one or the other. There are numerous questions such as these which will require population studies for answers. The means for doing studies of this type already exist in health departments and their laboratories.

Prothrombin

The use of anticoagulants in the management of coronary artery disease has become quite extensive. In order for them to be used wisely and safely there must be available accurate prothrombin determinations for monitoring prothrombin activity and maintaining coagulability of the blood within safe limits. Again, here is a laboratory test that needs to be accurate, reproducible, and easily available to all physicians. To determine the role of public health laboratories in this instance one need only ask: can the test be run routinely with a tolerable degree of reproducibility? Is there possibly some modification of the test which will increase its reliability as a routinely run test on a large scale? Are accurate prothrombin determinations available to all physicians in the area? Are there sufficient numbers of technicians trained to do this test skillfully?

Glutamic-Oxaloacetic Transaminase

For simplicity this may be referred to as transaminase. It is an enzyme found widely distributed in body tissues. In 1954 it was reported that serum concentrations of this enzyme are strikingly elevated during the first few days after myocardial infarction. Further clinical studies reported in 1955 showed that serum transaminase levels rise within 24 hours and fall to normal by the sixth day after acute myocardial infarction. Angina pectoris, coronary insufficiency, or subendocardial ischemia demonstrable only by ST-T changes in the electrocardiogram are associated with normal transaminase levels unless myocardial necrosis has occurred.

In an acute illness, in which the electrocardiogram is masked by previous electrocardiographic changes such as an old infarct, the serum transaminase level

is especially helpful in determining the presence or absence of myocardial infarction. Other disease states will also elevate transaminase levels, but this is seldom a problem in differential diagnosis of myocardial infarction.

This laboratory test appears to be in the transitional stage of development between basic and clinical laboratories and prospective large-scale use by practicing physicians. This transition will probably take place slowly and perhaps erratically without the assistance of public health laboratories. On the other hand, development could be more rapid and in a more orderly fashion with their assistance. It would seem that the role of the public health laboratories here is clearly one of assuming a certain amount of responsibility for applying new knowledge where it will help.

Cholesterol

It has long been known that development of atherosclerosis is associated with deposition of lipid, particularly cholesterol, in the arterial wall. Evidence that development of atherosclerosis is associated with disturbances of lipid metabolism has accumulated to considerable proportions in recent years. Although the nature of the relationship between the atherogenesis and disturbed lipid metabolism remains to be determined and, indeed, there are many hypotheses as to the nature of the underlying mechanism, it is an empirically established fact that elevation of the concentration of certain lipid components in the plasma is correlated with development of atherosclerosis. This has been particularly true, at least among components which are easily measured, of the plasma cholesterol concentration. Thus the level of plasma cholesterol concentration has some prognostic value, albeit very rough, for the development of complications of atherosclerosis in the individual. There also has grown up a strong impression, as yet not too well documented by concrete evidence, that any regimen that leads to reduction of plasma cholesterol concentrations will have a favorable influence on the course of atherogenesis. Consequently, great interest has centered on a recent finding that cholesterol levels are strongly influenced by the nature of dietary fat. It seems that by appropriate selection of sources of dietary fat it might be possible to lower and keep low-serum cholesterol levels and hence to reduce the development of atherosclerosis.

All of this information has led to a great increase in use of cholesterol determinations by physicians in diagnosis and management of their cardiovascular patients. However, there is evidence to show that it is very difficult to get agreement between laboratories doing cholesterol determinations on the same blood specimens even in the hands of well trained technicians. If one were to use inadequately trained technicians, the variance would probably be so great that interpretation of results would be useless.

Public health laboratories could play an important role in establishing the cholesterol determination as a reliable, reproducible test, and one easily available to all physicians who want to use it. This might require modification of laboratory methodology, establishment and maintenance of standards, and assurance that technicians who perform the test are sufficiently well trained. This will not be easy, and will undoubtedly involve research—a type of research designed to make the operation of cholesterol determinations on a mass scale reliable and efficient. In addition, with increased use of cholesterol determinations by physicians, a great deal more needs to be learned about the distribution of cholesterol levels in well populations and how these levels are altered by such characteristics as age, sex, race, dietary pattern, etc. The pub-

lic health department is in a prime position to carry out these epidemiologic studies with the public health laboratory as a key member of the research team.

Lipoprotein

Lipids in general have a very low solubility in water. Those in body fluids are maintained in solution by virtue of their attachment to proteins. These lipoproteins can be classified in different ways depending on the methods by which they are separated. One method that has received much recent attention is ultracentrifugation which yields a series or spectrum of lipoproteins classified according to their densities. It has been proposed that certain of the low-density lipoprotein classes, so identified, are more closely related to the development of atherosclerosis than are others, since they are present in higher concentrations: (1) in individuals who have a history of coronary disease than in those who do not; (2) in adults than in children; and (3) in young adult males than young females. It has been further asserted that determination of the amount of lipoprotein within these low-density classes has a unique value in the identification of those individuals who are developing atherosclerosis. However, it remains to be established that lipoprotein fractionation and analysis yields significantly more useful information than other simpler determinations such as that of plasma cholesterol.

The results of a large-scale cooperative study have recently been published. In it the value of the plasma cholesterol has been compared with that of ultracentrifugal lipoprotein analysis for the prediction of complications of atherosclerosis. These results appear to us to indicate: (1) that neither determination is of much value in selecting individuals who will develop evidence of coronary artery disease in a relatively short time; and (2) that on the whole the ultracentrifugal analysis shows no superiority to the simpler cholesterol determination.

Although the originators and the proponents of the ultracentrifugal procedure dissent from this opinion, it would appear that the investment required in expensive equipment and highly trained technicians for conducting ultracentrifugal analyses for diagnostic and prognostic purposes would not be warranted. The far simpler paper-electrophoretic analysis of serum lipoproteins may prove valuable in the study of atherosclerosis, but this remains to be established as a useful procedure in this field.

Summary

We have endeavored to report our observations of current functions of public health laboratories. We have been impressed, as we looked on public health laboratories taken collectively, that they are functioning in four major areas: the provision of laboratory tests as aids to physicians in diagnosis, prevention, and management of disease; the establishment and maintenance of standards; the training of technicians; and the conduct of research. Some laboratories are performing all of these functions; more of them are performing only some. Determination of who performs these functions, where they are done, and at what instance they are embarked upon in any one area rests upon the shoulders of the directors of public health laboratories.

We also have endeavored to relate to these observed present-day functions five laboratory tests, which now are part of the tools used by physicians in diagnosis and management of patients with cardiovascular diseases, and to point out that a frame already exists around which can be built the role of public health laboratories in the com-

munity control of cardiovascular diseases. These tests are (1) the identification of beta-hemolytic streptococci for the prophylaxis of rheumatic fever, (2) determination of prothrombin levels for the management of patients with myocardial infarctions, (3) the determination of glutamic-oxaloacetic transaminase for the diagnosis of mycocardial infarction and the possible identification of individuals likely to develop myocardial infarction by the determination of (4) serum cholesterol concentration or (5) lipoprotein fractions.

Difficulties in the tests themselves, in laboratory methodology, in developing the skills needed, and in establishing a timetable will have to be overcome. It does not seem, however, that these difficulties should negate the responsibilities of public health laboratories in the control of noncommunicable diseases.

Pioneer Planning in Tennessee

Inspired by the recommendations of the City-County Planning Commission of Nashville and Davidson County, the 1957 Tennessee State Legislature passed an act creating a metropolitan government for each of the counties in the state with populations of 200,000 or more. Currently these number four and together they comprise more than one-third of the state's population.

The act authorizes a charter "Commission to propose to the voters for adoption the charter for a Metropolitan Government." This Commission then prepares a proposed charter within nine months after which the commissioners of election must hold a special referendum election for ratification or rejection. If ratified, the new Metropolitan Government takes over the former functions of the chief city's officials and of county officials. Any smaller city within the county, however, may elect by referendum to join or remain outside the Metropolitan Government.

The Metropolitan Government divides the county into two districts, the Urban Services and General Services districts. The former originally will include only the principal city; the latter the rest of the county except for cities that elect to remain outside the consolidation. The two service districts have separate tax levies.

A Self-Survey of Public Health Needs: Warren County, N.J.

Presented here is a panel discussion by the Health Committee of the Warren County Welfare Council, Warren County, N. J., composed of: Mrs. Mildred Hopler, president, Warren County Welfare Council; Mrs. F. J. Schlink, author and editor; Mr. Fred Fuchs, president, Warren County Board of Agriculture; Mrs. Frank Folkner, former president, Home Economics Advisory Council; and Mrs. Frank Hinek, chairman, Warren County Welfare Council. It is followed by a story of the evolution of the employed questionnaire by: Mrs. Homer van Buren Joy, chairman, Rural Health Committee, New Jersey Welfare Council.

Background (by Mrs. Hopler)

Warren County is a small rural county in the northwestern section of New Jersey with a population of 54,000, representing about 16,400 families. There is one city with a population of 19,000 and four municipalities ranging in size from 2,000 to 5,000. Outside the municipalities county organization is based on townships, of which there are 18.

Community pride is deep-rooted in our section of the country and self-sufficiency and family responsibility are characteristic of the population. In recent years, with the rapid movement of industry from city to country, Warren County has begun to feel the impact of new families moving in from other sections.

It was within this framework that the Welfare Council was organized in 1942. The Council is composed of representatives of the health and welfare agencies operating within the county. In rural communities these agencies are limited in number and there are many other services needed. For that reason it was thought wise to enlist the support of as many representative groups in the community as possible, including the county PTA, school officials, American Legion, Veterans of Foreign Wars, Grange, Farm Bureau, Service Clubs, County Church Councils, and the Medical Society. The group meets frequently in order to provide a medium for exchanging information about activities concerned with the health and welfare of the county's citizens.

They ask themselves three questions: what do we have? what do we need? how do we get it? and from the search for answers have come the services that were seen as a need by the Council. The Health Committee of this Council was formed as a subcommittee in 1953 principally because at about that time it was obvious that one small hospital located in the western edge of the county was completely inadequate to take care of the increased demands upon its services and facilities.

Since the Welfare Council formed the nucleus for the group of citizens who were to concern themselves more and more with health problems, the composition of the Health Committee may be of interest. Besides the Welfare Council membership already described, there were representatives from United Milk Producers, Woman's Auxiliary of the American Legion, members of the Hospital Board of Trustees, State Health Department, Associated Farm Women, Civil Defense, citizen representatives of

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volunteer agencies, and others with interest in this special field. The formation of this committee indicates a considerable interest by the voluntary organizations. There are, of course, a number of official agencies working in the health field. Health records are kept by health boards in each municipality, but the amount of other public health work done by these health boards or their executive officers is determined by the municipality itself. Thus we have what may be considered a bare minimum of official health record-keeping devoted chiefly to vital statistics, that is, births, deaths, and marriage licenses.

There are also a few public health nurses in the county who are paid in part by the state and partly from municipal and school funds, since in many cases these nurses also serve as school nurses. Some residents of the county also avail themselves of other services offered by the state, principally those connected with sewage and garbage disposal and water supply, since these are the services with which the public is most familiar.

The Health Committee of the Welfare Council has been concerned principally with its functions as a coordinating agency for health activities. Its first concern was necessarily directed to the building of a new hospital. Once the fund-raising campaign for the new building was completed the Health Committee decided to undertake a health survey of the county for three reasons: (1) it was obviously essential to explore the unmet needs and take inventory of the existing resources in the county; (2) the volunteer organizations associated with the Welfare Council felt that they would be in a better position to cooperate with each other and coordinate their activities with the new hospital if they had a better picture of the county's health needs and resources; and (3) the committee felt that such a survey would be useful in coordinating information about the health services available in the county.

It was from this background that the Health Committee of the Welfare Council developed in Warren County.

Sampling Technic Used (by Mrs. Schlink)

The first part of the survey carried on by the Warren County Health Committee was an appraisal of existing resources. This was compiled by a subcommittee of 10 persons on the basis of consultation with voluntary health organizations, local school principals, county physicians, the Warren Hospital administrator and his staff, and the state secretaries of various professional societies regarding their members in Warren County with assistance of the State Department of Health.

A second subcommittee worked on the sampling technic to be used in the distribution of the self-survey form. The committee concluded that to obtain the broadest possible coverage of the county's population of some 16,000 families a 5 per cent sample could be considered adequate. This would mean that returns from 800 families would give a fairly accurate picture of conditions in the entire county. Since the returns might be expected to be no more than 50 per cent of the questionnaires distributed, it was decided to send out 2,000 survey forms. A local industry cooperated in the project and had 2,000 copies of the 13-page form mimeographed and stapled for distribution. It was decided that they should be distributed to municipalities in such fashion that each one would receive a number equal to 10 per cent of the families living within its boundaries. Approximately 800 have been returned and are being analyzed.

Compiling these data required about six months and evaluating them will take still longer. At the present time an editorial committee is working on

presentation, while the whole committee, acting individually as representatives of their organizations, are enlisting the services of expert medical, safety, and public health personnel to evaluate what we have in terms of optimum facilities for our community. The committee was fortunate in being able to secure expert services for working out a sound statistical basis for the distribution from Dr. Ernest Dalton, chairman, Division of Social Science, Centenary College for Women, Hackettstown, N. J., and Robert Hartje, statistical expert in the accounting department of a local industry, who has had considerable experience in handling IBM technics and other electronic computing problems. We would add for the benefit of those who feel that such talent is not available, that almost any industry today would have such statistical resources and be glad to cooperate. I am a member of the American Marketing Association, and also cooperated in setting up the sampling system.

How Was the Work Organized? (by Mr. Fuchs)

The Warren County, New Jersey, Board of Agriculture, of which I am president, is one of some 25 organizations that have representatives on the Health Committee. Distribution of the 2,000 family survey forms was handled principally by the representatives of farm organizations, the American Legion and its auxiliary, the Veterans of Foreign Wars, the PTA, and church organizations. If you think it was easy work, I want to tell you that my wife saw the people who brought the questionnaire back unfilled, saying it was too hard to fill out, and practically stood over them until they did. The 13-page, self-survey form was somewhat detailed for those of us who are not used to this sort of thing.

The actual distribution was handled on a geographic basis by individuals who accepted the responsibility of passing out and getting back anywhere from 10 to 25 questionnaires each. We had a briefing session for those who were to distribute the forms, but it was a foggy, rainy night, the same day as a state farm meeting, and not as many people got there as we had hoped. Briefly the only instructions given were these.

In order to get a good cross-section each distributor was to keep in mind: (1) geographic distribution within the community; (2) age of families, try to get both older and younger people; (3) socioeconomic status, distributing to families that are well off, those that are not so well off, and the in-between as well; (4) distribute to families with no children as well as to families with children living at home; (5) since each form was to be filled out by a family representative, the questionnaire was to be left in a home for a period of time before it was picked up.

Although it might have seemed that there would be considerable overlapping, this actually was not the case, for the various organizations represented different parts of our population. I do not know of a single instance where anyone was asked by two different people to fill out the questionnaire.

The one problem which we did occasionally encounter—the return of blank questionnaires—was often handled simply by turning the questionnaires over to someone else to start anew. It is believed that in the case of some families the questionnaire was too difficult to handle unaided. Since this was supposed to be a self-survey it would have defeated the whole purpose of the project if expert assistance had been given such families.

In all fairness, I must add that although we men gave our O. K. to the project and some of us helped with the distribution, I find when going over the names that the women really did most

of the work. We have a list of 60 persons who helped with distribution and more than 50 of them are women.

It was about this time, May, 1956, that we put the first money into the project. At that time telephone calls and postage for correspondence to coordinate the distribution became a little large for the individuals to be responsible for. The County Board of Agriculture and the Associated Farm Women contributed $20, the United Milk Producers $10. On this amount of money the committee operated until August, 1956.

We had in hand some 800 returned, completed forms, and tabulation was begun. Incomplete records indicate that the volunteers have put in a total of 151 hours in distributing and collecting questionnaires.

Tabulation of the Data (by Mrs. Folkner)

With the answered questionnaires back from individual families we wanted to know what it was they revealed. At first it seemed like an easy task to total the answers and sum up the replies. It was not so simple. First, we quickly learned that to tabulate all the answers would take so long that the results would lose their timeliness. Accordingly, a special meeting of the committee was called in June to determine the kind of information that was wanted immediately by our committee.

The sociologist from Centenary College for Women, a member of our committee, suggested that the time also had come for us to ask for professional assistance. We called on our district health officer who arranged for a meeting of some of our committee with the heads of several of the New Jersey State Health Department's Divisions. A great deal of background information was obtained from them and special thanks must be given for the very valuable assistance in tabulation and the technics of tabulation contributed by the director of the Division of Vital Statistics and Administration of the New Jersey Department of Health, who gave very generously of her time in laying out a pattern for tabulating the returns with a minimum amount of time and effort.

One might think that the experts and our committee would have differed somewhat on the questions that were to be tabulated. Actually, the experts and our small subcommittee were in fairly close agreement that some 64 questions be tabulated. The entire Warren County Health Committee had only seven questions added. The New Jersey Welfare Council, which had an interest in the survey as a pilot study for the form, requested the tabulation of seven additional questions. This meant that about one-quarter of the questions were to be tabulated. Since the Warren County Committee members decided that only about one-third of the questions were of immediate concern to them the survey forms were checked for these answers on the first run through.

This tabulation was done by committees of citizens under the auspices of the Home Economics Council and the Associated Farm Women, set up for convenience in various parts of the county. Standard forms for taking the data off the questionnaires were supplied each working group so that the technics for handling the data were fairly well standardized.

Women with previous business or teaching experience were chosen to do the tabulation. Some of them had helped distribute the forms, many had answered the survey, and all were volunteers. We set up an assembly line with groups of five to nine women. Each person was given one question to check and a group of forms. As soon as a question was completed, the forms were passed to the next person for the following question. Each township was iden-

tified by numbers and checked as a unit. We found that the tabulation moved smoothly and quickly.

This will give an idea of the time required for tabulation. Five women and one leader were able to tabulate 2,780 questions in four hours. Two groups of volunteers, consisting of 14 women, completed nine townships or 21,216 questions on 272 forms in eight and one-half hours.

What have we found?

The forms are lengthy, some refused to fill them out, and a few people completed only one page. Some questions would receive more answers if they were placed in another section. Questions on safety were answered only by families with preschool children.

The question on the composition of the family was confusing to some. Many gave their age where the question asked how many in each age group. The people who were tabulating had to refer to other questions at times to interpret and verify the answers given.

The survey is intended for rural counties and a number of the questions are not pertinent to urban areas. We suggest that part of the form be used in the larger municipalities.

We found that the surveys contain a great deal of information of interest to many groups, but at this stage we are still analyzing and compiling it.

It is possible to get volunteers to do the tabulation. They found the work interesting and are interested in the final results.

To make the tabulation a success it is necessary to plan and organize the work. There are countless telephone calls and many personal contacts to be made. However, it can be, and has been done in Warren County.

Interpretation and Evaluations (by Mrs. Hinek)

Those of us who have worked extensively on this survey feel that we have participated in a very valuable community experiment. There have been a number of suggestions of possible future uses of the questionnaires and we have no doubt that useful and interesting information will be mined from them. One thing that we did get was a very real sense of community interest and participation on a wide scope. We believe that the health organizations for the first time have secured a clear picture of the inventory of health problems. The farm group has expressed great interest in the possibility of using the reports of farm accidents.

For those who contemplate doing this kind of survey it is essential to keep in mind the need for some voluntary agency to coordinate the activities of all groups interested in health whether they be official, voluntary, or simply interested citizens groups. I cannot believe that other sections of the country are much different from our own. In a rural county, however, we encountered a certain amount of what might be characterized as reserve, a decided reluctance in revealing intimate personal details, even though the questionnaires were not to be signed. At one point a rumor that the questionnaires were going to be sent out of the county for tabulation almost stopped all activities on completing them in one section of the county.

We are convinced that if any one of the various groups represented in the Health Committee had attempted such a project on its own, obtaining a good cross-section sampling of the entire county would have been more of a problem.

Various incidents encountered in persuading people to fill out the questionnaires in all its intimate details suggested that less opposition was encountered because the project was handled by neighbors and friends and representatives of organizations of which the various families were mem-

bers than would have been the case if the survey had been handled by skilled experts sent in by some official organization.

The list of questions that were included in our preliminary tabulation is available for those who want them and copies of the data sheets used by the tabulation committees are also available from our committee. The survey forms may be obtained from the New Jersey Welfare Council which will shortly be revising it in the light of experience gained in our pilot study.

Summary

To sum up, it is important:

1. To provide a clear and detailed explanation of the purpose of the survey and its value to the community and to have the information extensively disseminated by the participating organizations so that there is good word-of-mouth publicity to encourage full cooperation on the part of participants in filling out the questionnaire.

The support of the local Medical Society and the cooperation of the official and voluntary health agencies are indispensable.

2. To distribute the forms to obtain a representative cross-section of the locality on a geographic basis.

3. To distribute at least twice as many forms as can be expected to be returned filled out.

The importance of adequate sampling cannot be underestimated and needs to be stressed particularly to groups who are not familiar with statistical technics.

One very valuable lesson learned from this survey is that a county can get together and through its own effort carry on a somewhat complex and difficult program in the field of community health.

Citizen Evaluation of Public Health Problems (by Mrs. Joy)

For 25 years the APHA, through its Committee on Administrative Practice, has been working on the evaluation of public health services and has devised survey forms that set patterns nationwide. Impetus was given the health survey movement by wartime findings of surprisingly poor health among rural boys in service. The American Medical Association took cognizance of this condition in 1946 and cooperated with such rural organizations as the American Farm Bureau Federation, its Associated Women, Extension Services of the U. S. Department of Agriculture, and the National Grange to bring about improvements. Health educators and rural sociologists were added to the faculties of land grant colleges and the development of rural health surveys followed.

Inspired by this constructive attitude toward rural health problems, Mrs. William Leicester of Pittstown, N. J., approached the New Jersey Welfare Council in 1952 with the proposal that its Health Committee study existing self-surveys planned for use in rural areas and the Evaluation Schedule of Community Health Programs of the New Jersey State Department of Health, published in 1951. This schedule was based on the 1947 edition of the APHA Evaluation Schedule.

Under Mrs. Leicester's chairmanship a committee of 32 persons representing both rural and urban background, professional and lay training, reached the conclusion that existing evaluation schedules were ill-suited to rural New Jersey and undertook to produce a new and unique schedule. Four lay women constituted the working committee which actually put this survey together. Countless hours were expended. Our two working consultants, Dr. Roscoe Kandle, and Dr. Marguerite Hall of the New Jersey State Department of Health, although busy professionals, gave unstintingly of time and talent. We cannot adequately express our gratitude.

When finally a rural evaluation schedule was down on paper the Warren County Welfare Council agreed to undertake a pilot run. Warren County

was chosen because of a strong Welfare Council which had connections with the New Jersey Welfare Council of long-standing; because of outstandingly capable leadership as evidenced in a recent educational survey completed successfully and the development and operation of a dental clinic; and because it shared the "home rule" attitude of other rural counties in the state. Also a new hospital was being built there, so the leaders were well motivated to ascertain actual health resources, gaps, and overlaps in Warren County. The College of Agriculture of Rutgers University was sufficiently interested in the pilot run to provide $500 to cover the cost of secretarial and hand-tabulating expenses.

After the Warren County Welfare Council pilot run is complete, a Revision Committee of the Health Committee of the New Jersey Welfare Council will still have a big job: (1) to revise the survey forms in the light of the pilot experience with two Warren County Welfare Council Health Committee members participating; (2) to prepare a Manual of Use, suggesting the steps necessary in conducting such a self-survey; and (3) to develop plans to make the revised forms available nationally to rural counties, either through the New Jersey Welfare Council or through some national organization.

You may well ask, "Why all this work? How does the Self-Survey for Rural Counties, produced by the Rural Health Committee of the New Jersey Welfare Council, differ from other self-survey forms?"

It differs in philosophy. Organizational structure in rural communities is totally unlike that in cities, also variations in structure exist between individual rural counties in New Jersey. So the forms are planned as a flexible guide which may be adapted as needed by local sponsors. The data are also susceptible to either machine or hand tabulation.

Philosophically most important, however, is the dual purpose of the questions in these forms. Only certain of them are suitable for coding, tabulating, and statistical analysis, like those of a traditional survey. The others are specifically planned as psychologic tools to alert the community to its needs, to promote self-criticism, and to stimulate community action. This is a unique strength of this type of rural survey. Rather than answering questions posed by a professional interviewer, citizens in the community must seek out the meaning of queries themselves. Self-help and self-education are keynotes in rural New Jersey.

The "Self-Survey for Rural Counties" is divided into two parts. Part I entitled, "An Appraisal of the Resources of the Community," is to be completed by a representative committee of lay and professional citizens (in many cases the county counterparts of state organizations represented on the New Jersey Welfare Council Committee). Part II, "Survey of Individual Families," is to be completed by a member of the household, probably the mother, so every effort is made to keep the language of the questions simple. Total removal of professional terms was indeed a difficult task.

The principle of involvement has been used in constructing this evaluation schedule. In Part I we involve the community leaders in thought and discussion of health assets and liabilities. In Part II we involve a householder in considering not only what services are available and how good they are, but also those which would be desirable. We hope that if we have people working together, ask them the right questions, and stimulate their imaginations we can bring about improvements in public health.

Social and Cultural Implications of Food and Food Habits

JOHN CASSEL, M.B.B.Ch., M.P.H.

It may require a considerable resourcefulness for the reader to project the points made here in influencing the behavior of a primitive people to the mores of the people among whom he works. The panel discussion, for which this paper laid the groundwork, did some of this projection for the listeners.

The last few decades have witnessed a rediscovery by the health professions that man cannot be understood out of context of his total environment. The concept that the social and cultural components of this environment are of equal if not of greater significance than the physical is not entirely new, but only recently have attempts been made to organize and formalize this knowledge. Recent articles have indicated that these social and cultural factors may play crucial roles in the whole broad area of interest to health workers, from the dynamics of disease processes in the individual [1-3] to the development of community-wide health promotion programs.[4, 5]

It is no coincidence that one of the major areas of interest common to both the health professions and the social sciences should center round the topic of food. From the dawn of medical history the role of food in health and disease has been under investigation by health workers, and its significance increases as further advances in nutritional knowledge are made. For social scientists a study of food ways and the system of attitudes, beliefs, and practices surrounding food may constitute an important technic in unraveling the complexities of the over-all culture pattern of a community.[6] Health workers are, in addition, now learning that food habits are among the oldest and most deeply entrenched aspects of many cultures, and cannot therefore be easily changed, or if changed, can produce a further series of unexpected and often unwelcome reactions.

With this degree of interest in food common to social scientists and health workers it is perhaps surprising that so little effective application of social science concepts has been made to nutrition programs. Two major reasons may account for this. The first is the lack of effective communication between the two sciences; the second the degree to which we as health workers are "culture bound" and tend to reject concepts and patterns of behavior different from our own.

Lack of effective communication relates not only to the difficulties resulting from specialized terminology, although there is little doubt that this is a problem. Of greater moment is the fact that health workers and social scientists approach their common goal, in this case a study of food, from two entirely different frames of reference without any common meeting ground. Social scientists, usually untrained in the field of health, cannot be expected to interpret the possible relationship of many of their findings to health programs, nor is this necessarily of particular interest to the majority of them. Health workers not being aware of the areas of competence of the social sci-

ences cannot specify the contributions they might expect from these disciplines, especially in initiating or evaluating programs.

This paper is an attempt to illustrate by means of a case study some of these social and cultural factors of significance in programs designed to change food habits; an attempt will be made to derive certain general principles from this illustration; and finally some of the specific contributions that social scientists could make in such programs will be indicated.

Before considering these factors, however, it is desirable to elaborate somewhat on the degree to which we as health workers are "culture bound." The type of training the majority of us receive makes it difficult for us to see any merit in points of view or patterns of behavior different from our own. Food patterns for example which differ from our concepts of "good" practices are automatically labeled "bad." Attitudes and beliefs differing from ours are regarded as "illogical," "misinformed" or "wrong." The people who hold these different concepts are regarded as "ignorant" or perhaps "superstitious," "childlike" or plain "stupid."

Unfortunately there are still too many of us who are convinced that our own particular set of beliefs, attitudes, and practices is the only correct way of life and one that should be emulated by people of all cultures and all social classes. Such a philosophy on our part presumes that only we as professional health workers know what is good for all people. Furthermore it is frequently our fond belief that our nutritional education is being executed in a "knowledge vacuum" (to use the words of Edward Wellin[7]) as far as the recipients are concerned; that because the population we are serving knows nothing of our nutritional concepts, they therefore have no concepts whatever about nutrition. It is evident that documentation of the relevance of social and cultural factors to health programs is unlikely to lead to any effective application of these concepts as long as such attitudes are maintained by the majority of health workers.

The Case Study *

In 1940 the Pholela Health Centre was established on a "native reserve" in the Union of South Africa. Health conditions among the Zulu tribesmen to be served by this center were extremely poor. The crude mortality rate was 38 per 1,000 population and the infant mortality rate 276 per 1,000 live births. Poor environmental sanitation and communicable diseases represented two major health problems, but of greater significance, perhaps, was the extensive malnutrition that existed. Eighty per cent of the people exhibited marked stigmata of this malnutrition and evidence of gross nutritional failure in the form of pellagra or kwashiorkor was common.

The Pholela Health Centre, charged with the responsibility of providing comprehensive medical care and health services to the population, was organized on the basis of a number of multidisciplined teams. Each team, consisting of a family physician, a family nurse, and a community health educator

* This study was first published in Health, Culture, and Community, pp. 15–41. Benjamin Paul, ed. Russell Sage Foundation, 1955, under the title of "A Comprehensive Health Program Among South African Zulus."

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(health assistant), was responsible for the health of a number of families living in a defined geographical area. The major health problems of the area were defined by the teams and broadly classified into "unfelt" and "felt" needs. Health programs to meet these needs were then initiated on two planes in which the promotive-preventive and curative aspects of the services could be integrated. Basically the function of the health assistants was to develop community health education programs whereby the "unfelt" needs could be made apparent to the community, and members of the community stimulated to change aspects of their way of life to meet these needs. Simultaneously curative and preventive services to individuals within their family units was the responsibility of the doctor and nurse on the team. Each individual was offered complete periodic health examinations, followed by a family conference to discuss the health problems of that family, and any illness in any family member would similarly be treated by his family doctor and nurse. At the clinical sessions the community health education programs were reinforced in the specific advice given the individual patients.*

The case study to be presented here is a description of one program which was designed to change the food habits of mothers and infants. Dietary surveys revealed that the existing diet consisted principally of a single staple, corn, prepared in numerous ways, supplemented by dried beans, negligible amounts of milk and occasionally meat and wild greens. Potatoes and pumpkins were eaten seasonally, and millet (sorghum) was fermented to brew beer which was consumed in large quantities. Whenever funds allowed, sugar and white bread were also bought. Even though this was a rural agricultural community, poor farming methods and poverty of the soil made it impossible for the vast majority of the people to raise adequate food supplies. Consequently a large percentage of the food consisted of refined corn meal purchased with money sent home by the migrant laborers. Furthermore, during the best month of the year, if all the milk had been equally distributed, only one-twentieth pint per head per day would have been available. Having determined the existing food patterns an analysis was then made of the major factors responsible for the inadequacy of the diet. These included the extreme poverty of the people, the extensive soil erosion, certain traditions as to which foods were customary, and inefficient use of available resources. In addition prevailing cooking methods frequently destroyed a large fraction of what nutrients were present.

As anticipated, early attempts at group meetings and home visits to demonstrate the causal relationship between a poor diet and a low standard of health encountered considerable skepticism. People maintained that their diet had always been the diet of their people. On this same diet, they maintained, their ancestors had been virile and healthy and consequently there could be no possible relationship between the present diet and ill health.

It was difficult to refute this point without having any reliable information about the health of their ancestors.

A search of the available literature, however, revealed that the present diet had not always been the traditional diet of the Zulus and other Bantu-speaking tribes. Prior to the arrival of the whites,

* For a more detailed description of the technics and programs of the South African health centers see:

Kark, Sidney L., and Cassel, John. The Pholela Health Centre—A Progress Report. South African M. J. 26:101–104 (Feb. 9); 132–136 (Feb. 16), 1952.

Kark, Sidney L. "Health Centre Service—A South African Experiment in Family Health and Medical Care." Social Medicine, Chap. 26. E. H. Cluver, ed. Central News Agency, Johannesburg, South Africa, 1951.

the indigenous cereal had been millet, corn having been brought into the country by the early white settlers. Because of its greater yield, corn had gradually supplanted millet as the staple cereal, millet being reserved solely for brewing. Furthermore, historically the Zulus were a roving pastoral people owning large herds of cattle; milk and meat had played a prominent part in their diet. So important was milk as an article of food that no meal was considered complete unless milk was included. The relatively fertile nature of the land at that time and the extensive wild game resulted in further additions of meat to the diet and a plentiful supply of wild greens. Roots and berries gathered from the forests were also extensively used.

These facts were presented to the community at the regular small group meetings initiated by the health assistants and discussion invited. In particular, confirmation was sought from the older members of the tribe, and in most instances such confirmation was received. This endorsement by the prestigeful and usually most conservative segment of the population insured that interest in the topic of food would remain high. Realization that the modern diet was not as traditional as had been supposed assisted in reducing resistance to the changes that were later advocated.

At subsequent meetings concepts of digestion and the functions of different foodstuffs were discussed. It was widely, though not universally, held that in some manner food entered the blood stream, but what happened to it thereafter was unspecified. Greatest interest was aroused by considering how a fetus was nourished in utero; discussion on this point would sometimes continue for hours. Many women were of the opinion that there must be a breast in the uterus from which the fetus suckled, but others indicated that calves in utero must be receiving nourishment in the same way, and no one had ever seen a breast in a cow's uterus. Some women maintained that the fetus was nourished by the placenta as the Zulu term for placenta literally means "the nurse." But when challenged, they were unable to explain how the placenta could feed the baby.

The result of these and similar discussions was to arouse a desire for further knowledge. When the functions of the placenta and umbilical cord were explained by use of posters and models, the interpretation was readily accepted. Over a period of time the concept that body tissues were nourished by the food via the blood stream became generally agreed upon.

As the concepts about the digestion and absorption of food began to change, it was possible to direct discussion to the function of different types of food. The view generally held was that all food had only one function, to fill the stomach and relieve hunger. This view was challenged, however, by a number of people who maintained that certain foods gave strength and others were fattening—fat being a bodily attribute much valued in this community.

Gradually it became more generally accepted that different foods had different functions, particularly in regard to infant health and nutrition. In attempts to improve infant nutrition, and in view of the existing resources, it appeared that green vegetables, eggs, and milk were the foods on which greatest emphasis should be laid.

Introduction of Green Vegetables

Even though green vegetables had rarely formed part of the diet, and then only in a few families, their introduction for a number of reasons appeared to be a promising first step. Wild greens gathered from the forests had always been eaten and were enjoyed, but due to soil erosion these were becoming increasingly difficult to find. There were

no very strong feelings or set of beliefs about green vegetables. The climate was suitable for their cultivation and each home had adequate space for use as a garden. Thus no marked objections to green vegetables was anticipated, their similarity to wild greens could be usefully exploited, and resources, at present unused, could be brought into use to make the vegetables available. In view of these circumstances the procedures that appeared to be necessary consisted of attempts to:

1. Increase the motivation of the people to eat vegetables—These included emphasis on their nutritional value in terms of concepts previously discussed; relating their taste to that of familiar wild greens; and emphasis on the financial savings that could be made by replacing part of the purchased food by home-grown vegetables. These views were presented at the group discussions held in the homes of the people and reinforced at the clinical sessions, particularly the prenatal and mother and baby sessions.

2. Demonstrate the means by which these vegetables could be obtained by the families—A demonstration vegetable garden was developed at the Health Centre where members of the staff could themselves gain practical gardening experience and where the families could have the methods of growing vegetables demonstrated. Vegetables from this garden were made available to certain families on prescription. The more cooperative families were assisted in starting their own gardens and as the number increased a seed-buying cooperative was initiated. Over the years a small market was established where families could sell their surplus produce, and annual garden competitions and an annual agricultural show were organized. As members of the Health Centre staff, particularly the health assistants, became more proficient gardeners themselves they were able to give practical advice and assistance to any of their families who desired it.

3. Demonstrate the palatability of the vegetables and the best means of incorporating them into the diet without destroying their nutrient values—Cooking demonstrations were organized both at the discussion groups and for the waiting patients at the Health Centre sessions. As far as possible, traditional means of preparing food were adhered to. Over the years different recipes were introduced and women from the area who were successfully incorporating vegetables into their families' diets were encouraged to organize these demonstrations.

The response of the community to these programs was satisfactory. In 1941 the first garden survey revealed that only 3 per cent of the homes had any form of vegetable garden, and that a total of five varieties of vegetables were growing. By 1951, 80 per cent of the homes had gardens and were growing more than 25 varieties of vegetables. This response was all the more gratifying as the size of the area served had been increased sixfold over the course of the 10-year period, so that some families had had only relatively recent contact with the program.

Increasing Egg Consumption

The attempts to increase the consumption of eggs encountered somewhat greater resistance than did the vegetable program. Surveys revealed that over 95 per cent of the families had poultry, and that eggs were relatively plentiful at certain seasons of the year. Eggs were infrequently eaten, however, but in contrast to vegetables, very definite views were held about them. It was considered uneconomical to eat an egg that would later hatch and become a chicken; egg eating was regarded as a sign of greed; and finally eggs were thought by some people to make girls licentious.

After prolonged staff meetings the consensus of team opinion was that none of these beliefs had any deep emotional associations and that probably the concept of it being poor economy to eat eggs was the most important of the factors preventing further use being made of eggs. The program based on this analysis therefore was patterned on the same general lines as the vegetable program. Technics for improving the egg yield whereby eggs could both be eaten and leave sufficient for breeding were

discussed; the nutritional value and palatability of eggs were stressed both in the community education programs and for each specific patient at the prenatal and mother and baby sessions; and various methods for incorporating eggs into the diet without any marked modification of prevailing recipes were demonstrated. The fact that certain adverse views were held about eggs was of importance, however. Even though these views were not strongly held they indicated that relatively greater effort would be required to motivate the community to use eggs.

As might have been anticipated, therefore, response to this program was slower than to the vegetable garden program. In the course of 12 years however the technics proved relatively successful, and the consumption of eggs, particularly in infant diets, steadily increased. Furthermore, toward the later years of the program, families began to put excess eggs on the local market and found purchasers among their neighbors, a phenomenon totally foreign to this community.

The Milk Program

Increasing milk consumption proved to be a considerably more difficult and complex problem. Not only was the supply extremely limited, but frequently the available milk was not being consumed. In particular, women took no milk whatsoever, and this became a matter of some concern to the Health Centre in regard to expectant and lactating mothers. Investigation disclosed that milk drinking was associated with very deep-seated beliefs and customs. Only members of the kin group of the head of a household could use milk produced by that man's cattle. This restriction applied equally to men, women, and children, so that no family could supplement its milk supply from another family outside the kin group, but the situation was more complex in the case of women.

During her menses or when pregnant, a woman was thought to exert an evil influence on cattle and was not allowed to pass near the cattle enclosure or partake of any milk. This applied even in her own home. Since it was usually impossible for men to know when a woman was menstruating, it was customary to exclude milk from the diet of the majority of girls once they had passed puberty. When a woman married and went to live with her husband's family group she fell under a double restriction. Not only was she a woman, but she was now in the home of a different kin group. Consequently, of all people in the community, married women were most rigidly excluded from partaking of milk. Under two conditions only might she have milk. If her father presented her with her own cow at the time of her marriage she could use milk from that cow, or if her husband performed a special ceremony involving the slaying of a goat, she would be free to use any milk in his home. Because of the general poverty of the area neither of these two procedures was common although several decades ago they were not uncommon in certain families.

The reasons for these customs were lost in the mists of antiquity, not even the oldest people in this community being able to explain them. "This is our custom, and this is how it has always been" was the only explanation offered. In all probability the customs are closely related to native religious beliefs centered around ancestors. Even today when some 60 per cent of the community are Christians, ancestors play a very important part, protecting a person from all manner of misfortune and ill health. The link between a man and his ancestors is his cattle, and ceremonies of propitiation involve the slaying of cattle. Accordingly, anything

that might have an evil influence on the cattle would endanger the relationship between a man and his ancestors. In addition, a married woman continues to have her own set of ancestors derived from her family and may not interfere in any way with her husband's.

The degree to which concepts concerning milk were enmeshed in the over-all cultural pattern made it obvious that the general approach used for increasing vegetable and egg consumption would be of little avail. Considerable motivation for drinking milk already existed in the community, and attempts to increase this motivation would be unlikely to change existing practices. Attempts were nevertheless made on several occasions to change these practices by stressing the importance of milk as an ideal food for lactating and expectant mothers, but were futile.

Analysis of the underlying beliefs indicated clearly that the barrier to greater milk consumption lay in the link between milk and the specific cattle from which it came. If milk from cows which did not belong to any member of the tribe or any other related groups could be introduced into the community, presumably the barrier would be overcome. The most practical method of accomplishing this was to make powdered milk available. Accordingly, supplies of powdered milk were obtained by the Health Centre and offered to families on prescription. No secret was made of the fact that this powder was a form of milk, but it was stressed that this milk did not originate from cows belonging to any of the Bantu people.

From the inception of this program it was clear that no stigma was attached to the use of the powdered milk. Even the most orthodox of mothers-in-law or husbands had no objection to this powder being used by the young women of their families. The only barrier that remained was that it was an unfamiliar food stuff with a strange taste. To overcome this, the familiar formula—increase the motivation, help make the product easily available and demonstrate methods for incorporation into the diet—proved all that was necessary. The application of these technics produced a demand for the powdered milk that, over the years, steadily outgrew the Health Centre supply. Families were then encouraged to budget their slender incomes to allow for its purchase from the local stores. By 1954 it became apparent that in some families the demand for milk had become too great to be met from either of these two sources. To the gratification of the Health Centre staff permission was given in a number of the more educated families for women to consume milk from the family cows without any marked reaction from the rest of the community.

Some of the results of the Health Centre's programs are of interest. In the course of 12 years the infant mortality rate dropped from 276 to 96, pellagra and kwashiorkor all but disappeared from this area and the average weight of the babies at one year had increased by two pounds. This trend, as far as was known, was not occurring elsewhere in the country, and in fact in neighboring areas where the Health Centre provided only medical care but no community health education program, no such changes were discernible.

Some General Principles

From this illustration it is now possible to derive some guiding principles indicating the significance of social and cultural factors to health programs in general.

The first is self-evident. Health workers should have an intimate detailed knowledge of the people's beliefs, attitudes, knowledge and behavior before attempting to introduce any innovation into an area. While this principle is frequently violated in practice it is

certainly no new concept in public health. What is not so well recognized however is that the intimate knowledge of these factors is but the initial step in the evaluation of cultural factors.

The second principle, which is usually more difficult to apply, is that the psychologic and social functions of these practices, beliefs, and attitudes need to be evaluated. As stated by Benjamin Paul,[4] "It is relatively easy to perceive that others have different customs and beliefs, especially if they are 'odd' or 'curious'. It is generally more difficult to perceive the pattern or system into which these customs or beliefs fit." It is in this area of determining the pattern or system into which these customs or beliefs fit that social scientists can probably make their greatest contribution to health programs. This is the knowledge that will help determine why certain practices obtain, help predict how difficult it will be to change them, and give indications of the technics that can be expected to be most helpful.

A third principle that should be emphasized was unfortunately not well illustrated in the example but is of fundamental importance in the United States. It should be appreciated that while it is permissible for some purposes to consider an over-all "American Culture," numerous distinct subcultures exist, sometimes even within a single county. These subcultural groups must be carefully defined, as programs based on premises, true for one group, will not necessarily be successful in a neighboring group. This also is an area in which we as health workers can receive invaluable assistance from social scientists.

There are a number of very interesting illustrations of the importance of these subcultural groupings in regard to food habits in the United States, of which only two will be mentioned. Margaret Cussler and Mary de Give[8] differentiate five major subcultural groupings in the South: white owners, white sharecroppers, Negro owners, Negro sharecroppers and wage laborers. To a greater or lesser degree each of these groups had different attitudes, beliefs, knowledge, and practices in regard to food, and for different reasons. John Bennet, Harvey Smith, and Herbert Passin[9] have distinguished in the southern part of Illinois eight separate and distinct subcultural groups, each with its own set of attitudes toward food. Interestingly enough, none of these attitudes were based on a knowledge or interest in the nutritional value of the foods.

Many nutrition programs today are designed for application to the total area under the jurisdiction of the nutritionist—an area that is often very large. The underlying premise would be that this total area—region, state, district, or even county—has a completely homogenous culture. Greater concentration of a nutritionist's time in a carefully defined subcultural group with the development of programs specifically designed for that group would eventually be more efficient in effecting permanent changes in food habits.

There are a number of other social and cultural factors, some of which have been implied in the case study and which, though important, have not been emphasized. These include a determination of the leadership patterns within a community, a definition of the decision makers in a family or larger institution, and determination of the status of various groups within the community and the status of the health worker in comparison to these groups. The importance of these factors has been well recognized by health workers in planning and executing programs and requires little further emphasis here. In this connection it is of interest to note however that several investigators[8, 10] report that in the majority of American homes all major food decisions are made by the

housewife. Concentration of the nutritional education on the housewife alone therefore would probably be more beneficial than attempts to educate the total community in many subcultures in the United States.

A further area in which profitable collaboration between social science and health could occur is concerned with the prediction of the long-range effects of any program. Following a program two interrelated series of questions would be of interest to all health workers. Are there likely to be any unanticipated repercussions of the program and, secondly, how permanent can the changes introduced be expected to be?

The answers to these questions will be largely determined by the degree to which the innovations are absorbed into the cultural framework and the impact they have on other facets of the culture. For example, in our illustration the effect of the acceptance of new dietary patterns by the Zulu women might conceivably eventually threaten the status of males as decision makers in that society. Similarly permission given to women to take milk might eventually be one of the factors changing the intensity of religious beliefs.

By indicating the possible effects on other segments of the culture, and by determining the degree to which the concepts embodied by the new program have been absorbed into the existing cultural framework, social scientists would have a significant contribution to make in sensitizing health workers to the possible long-range effects of their programs.

The concluding consideration is the degree to which we as health workers are "culture bound." Unless we can avoid cultural bias or ethnocentricity in our dealings with people, much of the crucial data will not even be made available to us by members of the community. Even should we be fortunate enough to have access to some of these facts, our analysis of the situation will continually be distorted through imposition of our own culturally determined system of values onto the behavior of others. In this regard social scientists can perhaps help us to become somewhat less "culture bound," but fundamentally for many of us this requires a major reorientation of our own philosophy which only we ourselves can achieve.

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Epidemiologic Observations on an Outbreak of Aseptic Meningitis Due to ECHO Virus Type 6

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This study provides additional evidence that ECHO virus Type 6 is one of the etiologic agents of aseptic meningitis. In view of the approaching poliomyelitis season, this comes as a useful and timely reminder.

An outbreak of poliomyelitis-like illness occurring in western New York in the summer of 1955 appeared atypical in that a large proportion of the cases were nonparalytic. Epidemiologic, clinical, and laboratory studies of this outbreak were undertaken. The results indicate that the principal etiologic agent of the nonparalytic illnesses was ECHO (enteric cytopathogenic human orphan) virus Type 6.[1] The epidemiologic observations of intensive studies made in Erie County, N. Y., are reported in the present paper.

Clinical Definitions and Methods

The investigation included all cases reported as poliomyelitis in Erie County residents during 1955, and an additional 21 hospitalized but unreported aseptic meningitis cases from Erie County, a total of 200 patients. Data were also obtained from 643 household contacts concerning minor illnesses within three weeks before, or after, the onset of the index case. Illnesses in contacts were characterized by fever, upper respiratory or gastrointestinal symptoms, headache, and malaise.

The syndrome of aseptic meningitis due to poliovirus, generally termed nonparalytic poliomyelitis, was considered clinically indistinguishable from aseptic meningitis caused by other agents. Aseptic meningitis was defined by the following clinical features: acute onset, fever, nausea and vomiting, headache, signs of meningeal irritation, benign course, and absence of permanent paralysis. The cerebrospinal fluid revealed a pleocytosis, predominantly lymphocytic. Paralytic poliomyelitis resembled the above syndrome but showed residual paralysis and frequently ran a more severe clinical course. Virus isolation and identification were performed using monkey kidney monolayer

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tissue culture, employing technics previously reported.[1]

Results

Virus studies were completed on 136 of the 156 cases of aseptic meningitis known in the county. The viruses isolated from stool, throat swabs, and cerebrospinal fluid are shown in Table 1. ECHO 6 was isolated from 68 per cent of the cases, poliovirus from 4 per cent, and other cytopathogenic agents from 6 per cent. The latter included one Coxsackie A9, two ECHO 2, and five unidentified agents. Viruses were isolated from a total of 77 per cent of the cases of aseptic meningitis studied.

There were 44 cases of paralytic poliomyelitis known in Erie County, of which 31 were studied in the virus laboratory. Of these, 68 per cent yielded polioviruses. No ECHO viruses or other cytopathogenic agents were recovered.

Cerebrospinal fluid was examined from 108 aseptic meningitis cases. Eleven yielded cytopathogenic agents, eight of which were ECHO 6, two of which were ECHO 2, and one was unidentified. No cytopathogenic agents were recovered from the cerebrospinal fluid of 22 cases of paralytic poliomyelitis.

The epidemic curves are shown in Figure 1. The aseptic meningitis cases had a median date of onset of August 10 as compared with a median of August 25 for the paralytic cases. The 92 cases from which ECHO 6 was isolated had a median date of onset of August 4. The median date of onset of the 27 paralytic

Table 1—Virus Recoveries from Stool, Throat, and Cerebrospinal Fluid Aseptic Meningitis and Paralytic Poliomyelitis

Virus Recovered	Stool		Throat		CSF		Total Cases with Positive Stool, Throat or CSF	
	No. Cases Pos./Exam.	Per cent Pos.	No. Cases Pos./Exam.	Per cent Pos.	No. Cases Pos./Exam.	Per cent Pos.	No. Cases Pos./Exam.	Per cent Pos.
			Aseptic Meningitis (156 cases)					
ECHO 6	78/127	61	48/115	42	8/108	7	92/136	68
Poliovirus	6/127	5	4/115	3	0/108	0	6/136	4
Other Agent	5/127	4	1/115	1	3/108*	3	8/136†	6
Total	89/127	70	53/115	46	11/108	10	105/136‡	77
			Paralytic Poliomyelitis (44 cases)					
ECHO 6	0/29	0	0/25	0	0/22	0	0/31	0
Poliovirus	19/29	66	11/25	44	0/22	0	21/31	68
Other Agent	0/29	0	0/25	0	0/22	0	0/31	0
Total	19/29	66	11/25	44	0/22	0	21/31	68

* Two cases with ECHO 2 recovery, one with an unidentified cytopathogenic agent.

† One Coxsackie A9, two ECHO 2, and five cases with unidentified cytopathogenic agents.

‡ One case yielding poliovirus Type I from stool and ECHO 6 from throat and cerebrospinal fluid was counted only once.

Table 2—Attack Rates by Geographic Area, Aseptic Meningitis and Paralytic Poliomyelitis

Geographic Area	Population *	Aseptic Meningitis		Paralytic Poliomyelitis	
		No.	Rate per 100,000	No.	Rate per 100,000
Buffalo	602,000	82	13.6	19	3.2
Suburban areas	257,000	45	17.5	15	5.8
Rest of Erie County	142,000	29	20.4	10	7.0
Total	1,001,000	156	15.6	44	4.4

* Based upon population estimates for 1955 of the Office of Biostatistics, Erie County Health Department.

or nonparalytic cases with poliovirus isolation was August 31.

The attack rates for three different population areas of Erie County are shown in Table 2. For aseptic meningitis the total attack rate was 15.6 per 100,000 population, while for paralytic poliomyelitis, it was 4.4 per 100,000. Although it was possible to identify several areas where aggregations of cases of aseptic meningitis occurred, radial spread could not be demonstrated when cases were mapped by weekly periods; nor could radial spread be demonstrated for paralytic poliomyelitis, perhaps because of the low incidence. The attack rates for aseptic meningitis must be considered minimal estimates, since no effort was made to determine the actual number of nonhospitalized cases in the county. The pattern of higher attack rates in suburban areas

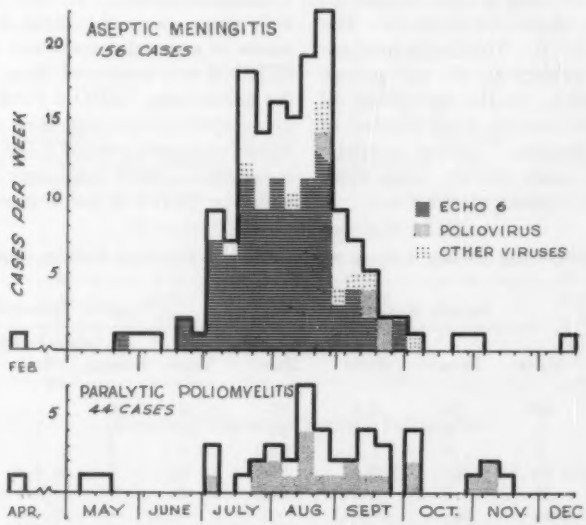

Figure 1—Aseptic Meningitis and Paralytic Poliomyelitis by Week of Onset and Viruses Isolated, Erie County, N. Y., 1955

Table 3—Age-Specific Attack Rates, Aseptic Meningitis and Paralytic Poliomyelitis

Age Groups	Population*	Aseptic Meningitis		Paralytic Poliomyelitis	
		No.	Rate per 100,000	No.	Rate per 100,000
0–4	98,000	18	18.4	10	10.2
5–9	81,000	62	76.7	11	13.6
10–14	64,000	39	60.9	2	3.1
15–19	63,000	17	27.0	5	7.9
20 and over	695,000	20	2.9	16	2.3
Total	1,001,000	156	15.6	44	4.4

* Based on population estimates for 1955 of the Office of Biostatistics, Erie County Health Department.

and in the remainder of the county as compared to the urban area was similar for aseptic meningitis and paralytic poliomyelitis.

Age-specific attack rates are presented in Table 3. The highest rates, 76.7 and 60.9 per 100,000, for aseptic meningitis occurred in the five- to nine- and 10- to 14-year age groups. The incidence of paralytic poliomyelitis was low as compared to previous years' experience in Erie County. Among cases of aseptic meningitis there was a high proportion of males, as shown in Table 4. The ratio was 2.5:1.0. This male predominance was evident in all age groups under 20 years. In the age group 20 and over there was an equal number of males and females. Among paralytic poliomyelitis cases during 1955 there was no predominance of either sex.

Among the 146 households (total population, 641) in which cases of aseptic meningitis occurred there were eight households with two cases and one with three. Table 5 shows the intervals between dates of onset of index cases and subsequent cases and the results of virus studies. Seven of the 10 subsequent household cases had dates of onset within four days of the index case. In two instances the intervals were seven and nine days and in one the interval was undetermined. In the household with three cases the interval between onsets of successive cases was two days. ECHO 6 was recovered from seven of the index cases, ECHO 2 from one, and no cytopathogenic agent from one. The subsequent cases yielded ECHO 6 in five instances, ECHO 2 in the case associated with the ECHO 2 index case, and no

Table 4—Sex Ratios, Aseptic Meningitis and Paralytic Poliomyelitis

Virus Recovered	Aseptic Meningitis				Paralytic Poliomyelitis			
	Males	Females	Male–Female Ratio	Per cent Male	Males	Females	Male–Female Ratio	Per cent Male
ECHO 6	66*	26	2.5	72	0	0	...	..
Poliovirus	3	2	1.5	60	12	9	1.3	57
Other Agent	5	3	1.7	63	0	0	...	..
Negative	24	7	3.4	77	3	7	0.4	30
Not examined	13	7	1.9	65	4	9	0.4	31
Total	111	45	2.5	71	19	25	0.8	43

* Case yielding poliovirus from stool and ECHO 6 from throat and cerebrospinal fluid has been counted here as ECHO 6 recovery only.

Table 5—Viruses Recovered and Intervals in Days Between Onset of Symptoms of Index Cases of Aseptic Meningitis and Subsequent Household Cases

Index Case	2nd Household Case		3rd Household Case	
Virus Recovered	Interval (Days)	Virus Recovered	Interval (Days)	Virus Recovered
ECHO 6	0	Not examined		
ECHO 6	0	ECHO 6		
ECHO 6	1	ECHO 6		
ECHO 6	2	ECHO 6		
ECHO 6	2	ECHO 6		
ECHO 6	2	ECHO 6	4	ECHO 6
ECHO 6	7	Not examined		
ECHO 2	9	ECHO 2		
Negative	Unknown	Negative		

agent in the case subsequent to the negative index case. In two subsequent cases specimens were not made available for laboratory study.

Four hundred eighty-five household contacts of aseptic meningitis and 158 of paralytic poliomyelitis were included in the study. Stool examinations for virus isolation were performed on 110 contacts of aseptic meningitis and on 37 contacts of paralytic poliomyelitis cases. The results of these examinations are presented in Table 6. ECHO 6 was recovered from 26 per cent of the contacts of aseptic meningitis examined, poliovirus from none, and other cyto-

Table 6—Virus Recoveries from Stools of Household Contacts According to Virus Recovered from Index Cases

Virus Recovered from Index Cases	No. of Household Contacts	Agents Recovered: ECHO 6 No. Contacts Pos./Exam.	ECHO 6 Per cent Pos.	Poliovirus No. Contacts Pos./Exam.	Poliovirus Per cent Pos.	Other Agent No. Contacts Pos./Exam.	Other Agent Per cent Pos.
Household Contacts of Aseptic Meningitis							
ECHO 6	270	21/79	27	0/79	0	2/79	3
Poliovirus	24	0/1	0	0/1	0	0/1	0
Other agent	32	0/0	..	0/0	..	0/0	..
Negative	97	8/30	27	0/30	0	0/30	0
Not examined	62	0/0	..	0/0	..	0/0	..
Total	485	29/110	26	0/110	0	2/110	2
Household Contacts of Paralytic Poliomyelitis							
ECHO 6	0	..	..	..	..	..	..
Poliovirus	87	1/23	4	10/23	43	0/23	0
Other agent	0	..	..	..	..	..	..
Negative	29	0/6	0	2/6	33	0/6	0
Not examined	42	0/8	0	3/8	38	0/8	0
Total	158	1/37	3	15/37	41	0/37	0

Table 7—ECHO 6 Virus Recoveries from Stools of Household Contacts of Aseptic Meningitis According to Sex and Health Status *

Health Status	All Contacts			Males			Females		
	No.	Pos./Exam.	Per cent Pos.	No.	Pos./Exam.	Per cent Pos.	No.	Pos./Exam.	Per cent Pos.
Minor illness	98	14/28	50	52	7/13	54	46	7/15	47
No minor illness	310	9/58	16	153	4/30	13	157	5/28	18
History not obtained	77	6/24	25	32	2/10	20	45	4/14	29
Total	485	29/110	26	237	13/53	25	248	16/57	28

* History of minor illnesses, as defined in text, occurring within three weeks before or after date of onset of index case.

pathogenic agents from 2 per cent. ECHO 6 was recovered only once from stool of contacts of paralytic poliomyelitis, while poliovirus was recovered from 41 per cent.

One case of aseptic meningitis occurred in a household contact of a patient with Type I paralytic poliomyelitis. The onset of symptoms was 16 days after onset of the paralytic case. This case of aseptic meningitis had poliovirus Type I in his stool and ECHO 6 in his pharynx and cerebrospinal fluid at the time of admission to the hospital on the first day of his illness. Stools were obtained from the five nonpatient members of this household 22 days after the onset of the index paralytic poliomyelitis case and six days after the onset of the aseptic meningitis case. No poliovirus was recovered from these contacts, but one yielded ECHO 6. This family has been included among the contacts of paralytic poliomyelitis cases.

The recovery rates of ECHO 6 among male and female household contacts of cases of aseptic meningitis are compared in Table 7. These contacts have been classified into those with, and without, a history of minor illness. ECHO 6 was recovered in 50 per cent of contacts with a history of minor illness and in

Table 8—ECHO 6 Virus Recoveries from Stool of Cases of Aseptic Meningitis and Their Household Contacts by Age

Age	Cases			Household Contacts		
	No.	Pos./Exam.	Per cent Pos.	No.	Pos./Exam.	Per cent Pos.
0–4	18	7/16	44	81	11/21	52
5–9	62	36/53	68	79	7/17	41
10–14	39	19/29	66	59	1/11	9
15–19	17	8/12	67	19	0/4	0
20 and over	20	8/17	47	236	9/53	17
Unknown	..	..	..	11	1/4	25
Total	156	78/127	61	485	29/110	26

Table 9—ECHO 6 Virus Recoveries from Stool of Household Contacts of Aseptic Meningitis According to Age and Health Status

Age	History of Minor Illness			No History of Minor Illness		
	No. of Contacts		Per cent	No. of Contacts		Per cent
	No.	Pos./Exam.	Pos.	No.	Pos./Exam.	Pos.
0–19	74	12/22	55	131	4/23	17
20 and over	21	2/6	33	176	5/35	14
Total	95*	14/28	50	307*	9/58	16

* Three contacts whose ages were not known have not been included in each group.

16 per cent of those without a history of illness. The recovery rate for those from whom no history was obtained was 25 per cent. In view of the high proportion of males among cases of aseptic meningitis it is of interest that among household contacts with a history of minor illness the ratio of males to females is 1.1:1.0 (52 males, 46 females). Further, there is no appreciable difference in the recovery rate of ECHO 6 from males and females with or without a history of illness.

The rates of ECHO 6 recovery from stools of cases of aseptic meningitis and their household contacts are presented by age group in Table 8. Among aseptic meningitis cases the stool recovery rates of ECHO 6 were uniformly high in all age groups. However, among household contacts there appeared to be higher recovery rates among younger age groups; namely 47 per cent among the 38 examined under 10 years of age in contrast to 17 per cent among those 20 years or older.

The relationship of ECHO 6 recovery from stool to age and history of minor illness in household contacts is shown in Table 9. The rate of recovery of ECHO 6 from contacts under 20 with histories of minor illnesses was 55 per cent, while from those under 20 without minor illnesses the recovery rate was 17 per cent. The household contact group with the highest recovery rate was the zero- to four-year age group with history of minor illness in which seven of nine yielded ECHO 6 from stool. Among contacts 20 years of age and older, with and without histories of minor illnesses, the recovery rates of ECHO 6 from stool were 33 and 14 per cent, respectively. Thus it is apparent that the higher ECHO 6 stool recovery rate for younger household contacts, shown in Table 8, was associated with an increased number of isolations from contacts with minor illnesses, most of whom were in these age groups.

Discussion

Other investigators have shown that ECHO viruses are widespread in distribution and occur in the normal population during the summer months.[2, 3] However, the 68 per cent recovery rate of ECHO virus of a single serotype in this outbreak was markedly higher than the recovery rates observed in these population studies. Kibrick, Melendes, and Enders apparently found a high recovery rate of ECHO 6 from patients with nonparalytic poliomyelitis in Massachusetts in 1954.[4] Davis and Melnick have reported the recovery of ECHO 6 from three cases of aseptic meningitis in Rhode Island in 1954 and from 21 cases of nonparalytic poliomyelitis in Connecticut in 1955.[5]

The data from this outbreak in Erie

County, N. Y., are presented as further evidence indicating an etiologic relationship between ECHO 6 and aseptic meningitis cases. This is borne out by: (1) the documentation of a localized outbreak of aseptic meningitis associated with the isolation of a single predominant viral agent; (2) association of the agent with clinical cases at a rate significantly higher than the prevalence of the virus in household contacts or paralytic poliomyelitis patients and their contacts; and (3) recovery of the agent from a parenteral site of the disease, cerebrospinal fluid. Additional support for this etiologic relationship was provided by the demonstration of specific neutralizing antibody response to ECHO 6 in patients with aseptic meningitis. Data obtained from patients in this outbreak, as reported previously,[1] showed that in each of seven patients tested a rise in circulating antibody to ECHO 6 occurred between the fifth and 12th days after onset. Antibody in these patients was still present seven months after recovery.

It is notable that in the experience reported here poliovirus was recovered from only 4 per cent of cases of aseptic meningitis. However, it is now apparent that the incidence of poliovirus infections was very low in Erie County in 1955. Also, although the epidemic curve for ECHO 6 infection showed a median date of onset 27 days earlier than the poliovirus infection curve (Figure 1), caution should be exercised in interpreting this as evidence of an earlier seasonal incidence of ECHO 6 infection. Such an interpretation would assume no bias in reporting of cases or selection of cases for hospitalization during the progress of the outbreak.

The recovery rates of ECHO 6 from household contacts were the same whether or not ECHO 6 was isolated from the index case (Table 6). This finding suggests that the index cases of aseptic meningitis whose virus studies were negative may have experienced ECHO 6 infection also, despite the failure to recover the virus from them.

The finding of a preponderance of males among the cases of aseptic meningitis was unexpected. However, the incidence of minor illnesses in household contacts was equal in both sexes, as was the ECHO 6 recovery rate. No explanation is available for this apparent increased tendency of males with ECHO 6 infection to develop central nervous system involvement.

Data were insufficient for the determination of an incubation period for aseptic meningitis associated with ECHO 6. However, since seven of nine subsequent household cases followed the index case by four days or less (Table 5), it may be inferred that either the incubation period is short (four days or less), or more likely, that the subsequent cases occurring within four days represent coprimaries.

The increased rate of recovery of ECHO 6 from young household contacts of aseptic meningitis and the association of this increased rate with minor illnesses may have several explanations. It may be assumed that previous outbreaks of ECHO 6 have conferred some degree of immunity upon older age groups. The presence of ECHO 6 antibody in pooled human gamma globulin would suggest the ubiquity of such previous infection in the adult population.[1] In addition, if the mode of transmission of infection is by direct contact, the increased risk of infection among children might be in part accounted for by greater opportunities for contact.

Aseptic meningitis may be associated with several etiologic agents. In Erie County, in 1955, in addition to the 92 cases from whom ECHO 6 was recovered, six cases were associated with poliovirus, one with Coxsackie A9, two with ECHO 2, and five with unidentified cytopathogenic agents. ECHO 6 was

recovered from only one of a total of 71 paralytic poliomyelitis cases and contacts. This recovery was from a contact in a household in which a case of Type I paralytic poliomyelitis and a case of aseptic meningitis due to ECHO 6 occurred. The low recovery rate of ECHO 6 in the households of paralytic poliomyelitis may well be a true reflection of the community rate, although there may be biologic, epidemiologic, or laboratory factors influencing the occurrence or recovery of ECHO 6 in individuals infected with poliovirus.

Summary

ECHO 6 virus was recovered from 68 per cent of 156 cases in an epidemic of aseptic meningitis, poliovirus from 4 per cent, and other cytopathogenic agents from 6 per cent. Eight of 11 spinal fluid isolations were ECHO 6.

The rate of recovery of ECHO 6 from household contacts with histories of minor illnesses was 50 per cent, while the recovery rate from contacts without histories of illness was 16 per cent. The recovery rate of ECHO 6 from concurrent paralytic poliomyelitis cases and contacts was 1.5 per cent.

The epidemic curve, familial aggregation, age distribution, and geographic pattern were described and compared to paralytic poliomyelitis.

A high ratio of males to females, 2.5 to 1.0, was noted among cases of aseptic meningitis. No male predominance occurred among household contacts with a history of minor illness, nor was there a sex difference with respect to ECHO 6 recovery from stools of household contacts.

Household contacts under the age of 20 years had a high incidence of minor illness (36 per cent), and more than half of such individuals studied yielded ECHO 6 virus (55 per cent).

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Michigan Conference on Aging

The 10th Anniversary Conference on Aging will be held in Ann Arbor, June 24–26 under the sponsorship of the Institute of Human Adjustment of the University of Michigan. The Conference title is "Free Time—Challenge for Later Maturity." It will be directed toward recommendations for using leisure, particularly among middle aged and older people, in ways that will insure good, personal satisfaction, and social usefulness.

The conference is under the direction of Wilma Donahue, Ph.D., director of the Institute. The American Public Health Association is among several participating agencies.

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Promoting a Local Health Department

Twelve years ago the volume "Local Health Units for the Nation," under the editorship of Dr. Haven Emerson, was published. It reflected the studies of an APHA Committee on Local Health Units. This was followed by a wave of increased interest in more health departments and particularly in the growth of larger and more rational health jurisdictions. To keep alive this interest the National Advisory Committee on Local Health Departments was organized in 1948 under the auspices of the National Health Council with the active cooperation of the APHA.

In the 12 years since the Emerson volume was published and the nine years of the committee's life, the original enthusiasm for "local health units" has subsided. Because the traditional pattern of both services and organization did not everywhere meet the situation, there has been a tendency to "let well enough alone." Not enough imaginative ingenuity has been applied to adapting to special circumstances the general guidelines of "Local Health Units for the Nation." The lack of sufficient appropriations and the shortage of professional personnel have made it easy to await more favorable circumstances.

Hence the National Advisory Committee decided to use the occasion of its 1957 annual meeting to take a critical look at where we stand in tax-supported community health services. Those who were fortunate to attend its Ninth Annual Meeting in Cincinnati were confronted once more with the problem of providing the nation adequately with health services. Perhaps too much emphasis had been placed upon structure as opposed to services. The annual meeting and the coming year's program, therefore, are dedicated to finding out what services are needed and desired and then finding the structure best suited to providing them. It was further postulated that much more may be accomplished through closer working relations and mutual understanding between voluntary and official agencies.

The Public Health Service is reexamining the problem from the standpoint of what the public really wants in this field. The public has not everywhere supported the traditional services recommended by the public health professions.

Public health workers therefore will be glad to see an excellent new promotional booklet called "Ten Tips Toward Tax-Supported Community Health Services." This is an exceedingly practical guide prepared under the auspices of the National Health Council by a committee chaired by Arthur Kneerim of the Metropolitan Life Insurance Company and published by the National Advisory Committee. The booklet is successful through text and illustration in capturing the technics that have

proved effective in practice. It is available from the National Health Council, 1790 Broadway, New York 19.

The program committee planning APHA's 85th Annual Meeting in Cleveland next November has caught the timeliness of this "new look." At a recent meeting it voted to devote the opening symposium to the subject of community health services in this second half of the 20th century. The brief studies made for the NACLHD meetings and further explorations projected assure that the sessions will be inspiring. The 1958 National Health Forum in Philadelphia in March will be devoted to the effect upon health services of the changes in where people live, or in the increasing mobility of the population.

Taken together these developments indicate that we may expect progress. Public health workers should welcome this cooperation of citizen groups and voluntary agencies. The day has passed, if it ever was, when community health services were the concern only of professionals.

Detroit Diphtheria Experience of 1956

How a near disaster, public healthwise, was converted into a brilliantly successful campaign to raise the level of childhood immunization against diphtheria is demonstrated by the Detroit, Mich., encounter with diphtheria during the last quarter of 1956. To the health officer the appearance of a diphtheria epidemic in this day and age can be an administrative calamity. The public, and indeed the medical profession itself, have come to believe over the years that this is one of the more dangerous communicable diseases which has all but been eradicated. "It can't happen here," is the common attitude. Detroit's experience should serve as a warning to the rest of the country that not only CAN it happen, but it can occur with unexpected suddenness in a seemingly fairly well immunized population.

The fact that the diphtheria incidence had reached all-time lows in this metropolitan community over recent years paradoxically contributed to the false sense of security gained by the general public in respect to this disease. The resultant complacency was especially noticeable in families living in the more depressed areas of the city who had failed to take full advantage of Detroit's several immunization programs. Because of this apathy and carelessness on the part of thousands of parents in attending to the immunization needs of their children, Detroit's immunization armor plate had its weak spots, particularly in the southern sector of the city.

Early in October cases of diphtheria began appearing in elementary schools where, according to the immunization records on the new-entrant group, it was least expected. How deceptive these data were in denoting the true immunity status of the entire school population was soon learned by local health officials. In many schools well in excess of 75 per cent of the kindergarten children had a history of DPT inoculations in early infancy or during their preschool years—one school as high as 94 per cent, yet these schools were among the hardest hit by diphtheria.

By mid-November, the daily incidence of new cases had begun to mount at an alarming rate and Detroit knew that it was in for more than its usual endemic occurrence of the disease. Between October 1 and the end of the year 141 cases of diphtheria were reported and four deaths. The total cases for the year exceeded the median morbidity by more than nine-fold. It was evident to local health officials that Detroit's ordinary control programs were too slow and were not

effectively meeting the problem. It was decided to launch an intensive campaign of public education and mass immunization centered in the schools located in the "outbreak zone."

The public was kept informed, day-by-day, through a cooperative local press as to the daily count of cases and deaths for the year and approximately where they were occurring. Nearly every story contained some reference to the urgency of diphtheria toxoid inoculations and the current schedule of immunization clinics. This adroit use of "negative" education with regard to the wide publicity given to the morbidity of the disease, paid off big dividends public healthwise. Almost immediately, without noticeable panic or hysteria, parents began sending their children flocking into their private physicians' offices and signing up in heretofore unheard of numbers for the emergency school clinics in the outbreak zone. In the short space of three to four weeks 80,000 children received diphtheria toxoid in school clinics and private physicians inoculated nearly four times that number throughout the rest of the city. By December 15 the epidemic threat came to a sudden halt with but a few sporadic cases appearing in the balance of the year, and no further flare-ups have been reported at this writing.

Whether the "sudden saturation" campaign of mass immunization, carried out by the Detroit Department of Health with the full cooperation of the local medical profession and citizenry, was largely responsible for halting the epidemic threat, or whether the epidemic burned itself out for the want of sufficient susceptibles in the population, or a combination of these forces, we leave to the epidemiologists and biostatisticians to argue. The fact remains: Detroit probably now enjoys one of the highest levels of protection against diphtheria, close to 95 per cent or better for its childhood population under 15, of any comparably large city in the country. All this was accomplished on a voluntary basis. Not only were protection levels in the community raised against diphtheria, but to tetanus and whooping cough as well, since diphtheria-tetanus combined antigens were used in children five years of age and older, and diphtheria-pertussis-tetanus combined antigens in infant and preschool age groups. All this occurred when thousands of these same children were receiving poliomyelitis vaccine inoculations as well. We are sure that if a polio-diphtheria combined vaccine were available Detroit would have pioneered its use in their "sudden saturation" immunization campaign as well!

A COMMITTEE REPORT

Training Public Health Workers

Committee on Professional Training

Health Officers Section

The committee is gratified that funds for training public health workers, which have been so badly needed, have now been made available through Public Law 911, passed by the last Congress. The availability of these increased training funds brings problems and opportunities to public health administrators for their wise use. They call for the development of criteria and policies to assure that their use will have the greatest effectiveness in recruiting well qualified new people into the public health field and providing adequately trained personnel.

The first problem is that of criteria for selection of new people. It is elementary that eligibility for admission to a school of public health or other educational institution should be determined at an early stage of consideration of those for whom such training is proposed. Beyond this there should be criteria of personal and professional qualifications which can guide agencies and schools alike in their task of selection. This committee recommends that the Committee on Professional Education or other appropriate body of the APHA take the lead in a joint undertaking with the Association of State and Territorial Health Officers and the schools of public health to formulate suitable criteria for all the major categories of workers.

Another problem relates to the people who are already employed and who find it difficult to get away for a year's full-time graduate study. Since training for these people is of such importance to the public health program, we urge schools of public health to provide as much flexibility as feasible in their policies regarding the taking of training on a part-time basis, a quarter at a time, or on such other basis as may be practicable.

The worker whose basic academic foundation may not be strong, or who has been long out of school, may need a period of basic academic study before entering the graduate program of a school of public health. We recommend that possibilities of supporting one or more quarters of such preparatory work for otherwise well qualified individuals be explored.

With particular reference to medical officers it seems desirable that new recruits should have a definite period of at least several months' supervised experience in an operating public health agency before receiving academic training. This serves several purposes.

1. It permits the physician to determine whether he is really interested in public health as a career.

This report of the Committee on Professional Training was presented at the Eighty-Fourth Annual Meeting in Atlantic City, N. J., on November 12, 1956. The 1955 report, not previously published, is also included because of its relevance to the later committee material.

2. It permits an evaluation of his personal and professional qualifications for public health. By thus screening out those who decide against a public health career, or who are found to be unsuited for it, this preacademic experience serves to make funds expended for training yield higher dividends.

3. It makes the academic training more meaningful.

Since trainees are being selected both by state and local departments of health and by schools of public health, there is need for collaboration to secure uniform policies in this regard.

In particular the committee would emphasize the opportunity the new training funds provide for the development of long-range, systematic recruitment and training programs. We urge the states, in cooperation with schools of public health and the Public Health Service, to set up programs which will enable them to recruit new physicians into a plan which provides for systematic progression through preliminary experience, academic training, and residency to eligibility for certification by the American Board of Preventive Medicine.

Finally, the greatest good will come from this availability of new training funds if states do their part. A tendency on the part of states to reduce the amount of state and grant-in-aid funds used for training will surely make uncertain the continuation of these federal training funds. We, therefore, urge the states to strive to secure increased state training funds and to expand their own state training efforts. Further, in order to make training most effective, each state health department and large city health department should designate definite responsibility for training and should develop consistent policies governing training for various workers. In this regard it is suggested that the Conference of State Directors of Training is an agency which can provide helpful assistance.

A problem at the state level is the proper coordination and use of funds which may be available from local sources and through voluntary agencies. It is particularly important that these sources not be lost as a result of the more adequate funds for training now available. It is suggested that state departments develop their plans to provide for continued stimulation and effective use of funds from these sources, particularly in the area of short-course and other inservice training.

The committee recommends that an accurate, authoritative, and up-to-date central listing of all scholarships which are available for public health training, the categories and qualifications of personnel who are eligible, and approved approaches to training be set up and maintained, preferably in the Traineeship Unit, Division of General Health Services of the Public Health Service. Provision should be made for wide publication once a year.

In 1955 the committee recommended, and the Health Officers' Section approved, the development of programs of refresher or continuing education for health officers. It was suggested that the schools of public health be asked to consider such plans. We are gratified to learn that this idea has received the approval of the Association of Schools of Public Health and the Association of State and Territorial Health Officers, and that some progress has been made toward securing financial support and toward setting up a committee to undertake the development of such programs, this committee to include representation from the Health Officers' Section, the Association of Schools of Public Health, the Association of Public Health Physicians, the American College of Preventive Medicine, the Association for Business Management in Public Health, and the Association of State and Territorial Health Officers.

We are gratified at this progress, ex-

press our continued belief in the importance of this undertaking, and pledge our full support to its fruition.

MARGARET W. BARNARD, M.D.,
Columbia University School of Public Health, New York, N. Y., Chairman

C. HOWE ELLER, M.D.
BEN FREEDMAN, M.D.
HENRY R. O'BRIEN, M.D.
VERNON M. WINKLE, M.D.
WILLIAM P. RICHARDSON, M.D.
Sitting with the committee by invitation—ELMER L. HILL, M.D.

Continuation Courses for Health Officers—1955 Report

The survey of state health departments concerning refresher courses or "continuation education" for health officers clearly indicates a need for and interest in such courses. It is clear, further, that such courses should ideally be given by schools of public health.

It is the feeling of the Committee on Professional Education that the Health Officers Section should take an active role in developing these educational programs.

Therefore the committee recommends:

1. That the Health Officers Section approve and give support to the development of plans for refresher or "continuation education" courses for health officers, to be given by schools of public health, and
2. Approve the solicitations of funds from appropriate sources to aid in the development of such plans and in consulting with schools of public health after clearing through appropriate channels of the APHA, and
3. That a committee be empowered to proceed with such plans. This could be a special committee appointed for the purpose, or the Section Committee on Professional Education.

Subsequently, consideration should be given to the development of an advisory committee with representation from such groups as the State and Territorial Health Officers, the Association of Schools of Public Health, the Association of Teachers of Preventive Medicine, College of Preventive Medicine, etc.

The attached report summarizes the results of the other activity of the committee during the year, a survey of policies and practices regarding short courses and inservice training in state health departments.

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Report of a Questionnaire Survey of Short Courses and Inservice Training in State Health Departments

In a survey of state health department training programs and budgets which the committee carried out last year it was evident that short courses and inservice training constituted an important component and in many states the major component of the public health training picture. Since that survey shed little light on the extent and kinds of such training, the present survey was carried out to get more explicit information in this regard.

Questionnaires were sent to 53 states and territorial health officers, and 33 were returned. In addition, the District of Columbia Department of Health wrote that their program could not be

fitted into our questionnaire, but that they carried on a considerable amount of this kind of training.

The results of tabulation of returned questionnaires are summarized below:

1. Number of states requiring short courses and/or field training:

For entry into public health	23
For promotion	13

2. Categories of workers and kind of training required:

	One or Both Required	Short Courses	Field Training
Medical officers	16	9	11
Nurses	23	12	19
Sanitarians	21	13	17
Clerical and statistical	5	4	1
Other	9	4	6

3. Length of required initial training for medical officers, nurses, and sanitarians:

	Under 6 Weeks	6 Weeks and Over
Medical officers	9	3
Nurses	10	9
Sanitarians	6	11

NOTE: Four states did not indicate length of training.

4. Financial arrangements for trainees:

On salary	14	
On stipend	4	
Salary supplemented by subsistence		9
Other combinations and variations		9

5. By whom short courses are given:

State and local department personnel	19
Above personnel with assistance from an educational institution	6
An educational institution	4
U. S. Public Health Service	7

6. States providing brief refresher courses not for credit or promotion:

For medical officers	18
For nurses	30
For sanitarians	28
For clerical and statistical personnel	16
Other	9

7. Sponsorship of refresher courses:

State health department	25
Educational institution	7
State health department in cooperation with an educational institution	3
U. S. Public Health Service	3
A professional organization	5

Comment

Twenty-seven of the 33 states returning the questionnaire this year were among the 40 states from which completed questionnaires were received last year, so the information secured this year in a very real sense supplements that of last year's study.

It is evident from the above data, as well as from comments on questionnaires, that practices with respect to required training for new workers vary widely. Some of the comments make the point that short courses and/or field training are required only for those without formal training or previous public health experiences. Others indicate that orientation training is provided primarily by close initial supervision on the job.

There are more general and definite provisions for initial training for nurses and sanitarians than for other workers. Only half of reporting states require initial training for medical officers and in most of these the training period is less than six weeks. Length of training courses for nurses was less than six weeks in half of the states requiring initial training, but 11 of 17 states giving the length of training for sanitarians have programs of six weeks or longer. This doubtless reflects the fact that sanitarians, unlike nurses and physicians, usually enter the public health field without a definite professional background related to public health.

The common practice is for the new worker to take his training on salary, sometimes supplemented by a subsistence allowance while away from

home. Only four states reported the use of stipends for this kind of training.

Training is provided in the majority of states by state and local health department personnel, sometimes assisted by an educational institution. It is not uncommon for a given state to have different provisions for the training of different categories of workers. For example, most of the seven states utilizing Public Health Service training programs do so for sanitarians and their own personnel carry on training activities for other groups.

Nearly all states indicated that various refresher courses are provided with some frequency. Here, again, the states having courses for nurses and sanitarians far outnumber those with such courses for medical officers and other workers.

The sponsorship picture for refresher courses is very similar to that for orientation training except for the participation of professional organizations in five states. This participation of professional organizations is an encouraging development.

In hope of getting some indication of what progress may have been made in securing state funds for training, the final question asked whether any state-appropriated funds are available in the 1955–1956 budget specifically for training purposes. Twelve states indicated that some state funds are available. This compares with only five of the 40 states replying last year and seems to indicate that definite progress is being made in this regard.

In summary, we can say the study indicates extensive but quite variable training activities for new workers and for continuing inservice training. The training tends to be sponsored by state health departments, carried out by state and local personnel, and financed out of operating budgets with trainees receiving regular salary. There is a quite evident need for more extensive, systematic, and consistent development of practices and policies in this field.

Montana Adds Fluoride Experience

The results of a clinical survey of grade school children in several communities of Montana made by local dentists in cooperation with the dental division of the State Department of Health adds another link in the chain of evidence for fluoridation. Lewiston and Miles City water in its natural state has a fluoride content of 0.5 ppm, while Polson's water supply contains no fluoride.

In Lewiston six-year-old children had 32.8 per cent fewer decayed, filled, and missing teeth (DFM) than the same group in Polson; 10-year-olds in Lewiston had 47.8 per cent fewer than those in Polson. Miles City findings are similar to those for Lewiston. Miles City in July, 1955, added fluorine to its water supply to bring it up to the optimum level of 1 ppm in order to obtain maximum benefit for its children.

Clearing House on Public Health Salary Information and Personnel Needs

An Eighth State Salary Study

The report of the eighth study of salaries in state health departments has been published by the Public Health Service. Reflecting pay rolls of August, 1956, the report is based on a total of 4,442 workers in 19 occupational classifications in the 48 states and four territories. The two largest groups, each with 29 per cent of total workers, are professional laboratory personnel and environmental sanitation personnel, the latter about equally divided between sanitary engineers and others.

Of the 11 occupational groups that have been included in each of the studies since the first in November, 1947, the sanitation personnel (apart from engineers) have enjoyed the largest percentage increase in median salaries (dollar value, not purchasing power). The nine-year increase for this group was 92 per cent, followed closely by directors of dental services with 84 per cent increase, and medical personnel with 82 per cent. Median salaries of directors of sanitary engineering and of laboratory services registered the smallest percentage increase, 49 and 50 per cent, respectively. Directors of public health nursing enjoyed a 57 per cent increase in median salaries over the nine-year period.

The cost of living over the same period increased about 20 per cent. It would appear, therefore, on the average for professional personnel of state health departments in relation to other occupational groups, the gap between rise in salaries and rise in cost of living, due to war and postwar virtual freezing of public health salaries, has begun to narrow.

The latest prior study was made in 1953. In the three-year period median salaries increased from 6 per cent for veterinarians and directors of sanitary engineering to 19 per cent for health educators and 18 per cent for sanitary engineers (apart from directors). Each of the remaining groups except dentists (9 per cent) showed median salary increases of 10 per cent or more.

In the interests of comparability with information about other occupational groups, the material in this study is for the first time analyzed by the Census Bureau rather than Public Health Service regions. The report is made up almost entirely of charts and tables giving details by state, region, and occupational classification. Public Health Service Publication No. 524, Bureau of State Services, Public Health Service, Washington 25, D. C.

Salaries of 100,000 Engineers

The Engineers Joint Council has published its second biennial "Professional Income of Engineers—1956." The report is based on a mail survey in which usable replies were received from 107,832 engineering graduates employed in industry, government, and engineering education. These represent about 18 per cent of the estimated engineering graduate population.

Sanitary or public health engineers are not separately classified. Hence, it is impossible to get from the published material data on salaries for this group as compared to others. However, the lowest starting salaries are paid to engineers in government, federal and other, in telecommunication services, and public utilities which includes sani-

tary services. These groups include 20 per cent of the sample.

The value of this material to health departments and other relevant agencies lies in indicating the competition they must meet in recruiting sanitary engineers. Engineers Joint Council, 33 West 39th St., New York City; $1.50.

A Nursing Career Pamphlet

"New Directions—in Public Health Nursing" is a brief and effective nursing career pamphlet by the Philadelphia Department of Public Health. It is in the form of an informal talk by the director of the Division of Public Health Nursing, Madelyn Hall. Including pictures, she describes for those about to graduate from a school of nursing some of the activities and satisfactions of a public health nursing career, "a rich field of nursing endeavor. . . . Public health nursing is an opportunity for you to give self-expression to the deepest human instincts as you help your fellow man find his way to health and increased well being."

The tangible rewards are left for the last page, range of salaries, vacations, sick leave, and other fringe benefits as they apply in Philadelphia. The trainee annual salary begins at $3,666.

"If you are interested, won't you drop me a line?" says Miss Hall. This may mean she would share the pamphlet also with those seriously trying to develop their own career pamphlet. Room 615, City Hall Annex, Philadelphia 7, Pa.

Upward Trend of Nurse Salaries

"The upward trend of public health nurse salaries is continuing" according to the Nursing Outlook. Its January, 1957, issue publishes the results of the 1956 study of salaries of public health nurses.

For the study questionnaires were answered by 69 per cent of the more than 1,200 sent. The percentage of returns ranged from 63 per cent of nurses in local health departments to 75 per cent of those in nonofficial agencies.

During the past five years median salaries of supervising nurses employed by boards of education rose 25 per cent, those of staff nurses 24 per cent. Among voluntary agencies the percentage increase was 21 per cent for supervising nurses, 18 for staff nurses, and 16 for nurse directors. For local health departments figures are available only for 1953, 1955, and 1956. In this period nurse director salaries increased 13 per cent, 17 per cent between 1953 and 1955 and then dropped back 4 per cent between 1955 and 1956. The 1956 level, however, was 11 per cent higher than that for nurse directors in voluntary agencies. For nurse supervisors in health departments the level was 15 per cent higher than for those in voluntary agencies; for staff nurses 11 per cent.

The full report, "Salaries of Public Health Nurses in Selected Public Health Nursing Services, 1956," is available in reprint from the National League for Nursing, 2 Park Ave., New York 16.

Need for Professional Nurses

"Nurses for a Growing Nation" represents the conclusions of a National League for Nursing study as to the extent to which nurse power in the country needs to be stepped up. Because of the many nursing positions that remain vacant, the hospital services that are curtailed for lack of nurses, and the need to expand public health, industrial, and other nursing fields, the study concludes that by 1970 the present ratio of 258 nurses per 100,000 population should be stepped up to 350. This would mean an increase of nearly two-thirds in the present number of professional nurses—from 430,000 to 700,000.

The study estimates that if the present 4 per cent of college-age girls continue

to enter the nursing profession, the ratio of 300 nurses per 100,000 population can be reached by 1970 because of the expected increase in that age group. However, if present number of admissions to nursing schools continue, the ratio will drop rather than increase from the present. Since nursing schools are presently operating to approximately 90 per cent of capacity, it is doubtful whether they could continue to train the 4 per cent of an expanding college-age population without an expansion of their facilities.

The 32-page report is in two colors illustrated extensively with charts. National League for Nursing, 2 Park Avenue, New York 16; 35 cents.

One Route to a Nursing Career

"The College Way to a Nursing Career" is a 24-page illustrated booklet, which it is hoped will "spur renewal of interest in counseling young people about the widening opportunities for graduates of collegiate nursing programs." It is addressed to young people and suggested for the use of recruitment groups, nursing, hospital, and medical associations, and to nursing and nursing school directors.

The booklet was prepared by the Committee on Careers of the National League for Nursing. In a recent study the committee found that one-third of nurses in current practice are in positions for which college preparation is either required or desirable. In contrast only 15 per cent of the 110,000 currently enrolled in nursing schools are in basic programs leading to a baccalaureate degree. "The collegiate nursing program is the shortest first step in reaching supervisory or management posts in both nursing service and education, for which there is now a shortage of nurses prepared to fill," according to the booklet.

The booklet describes the college nursing program, student life, cost, suggestions for choosing a program, and possible opportunities. Among the last named is a paragraph devoted to public health nursing.

The booklet is attractively done in two colors with a minimum of professional jargon. Committee on Careers, National League for Nursing, 2 Park Avenue, New York 16; 15 cents, reduction for quantity orders.

Recruiting Dietitians

The American Dietetic Association has two new recruitment pieces. "Dietitians in Demand" is a revised three-page leaflet which in small compass tells a good deal about what a dietitian does, what the opportunities are, and how one prepares for the profession. "The Story of the Dietitian in the United States" puts the glamour into the picture, starting with "the last decade of the 19th century when a woman with a unique assignment was introduced to the hospital scene." Contributions in the two world wars, growth and recognition of the profession, and service in various foreign fields are interestingly described.

Each of the pamphlets is an attractive two-color illustrated job. American Dietetic Association, 620 N. Michigan Ave., Chicago 11, Ill. Single copy of "Dietitians in Demand" free, otherwise 5 cents per copy, or less for quantity. "Story" (16 pp.), 25 cents.

Michigan Municipal Salaries

The 14th in an annual series of compilations of Michigan Municipal Salaries and Wages by the Michigan Municipal League has recently been published covering the situation as of January, 1957. There is relatively little on public health salaries since the majority of full-time health departments in the state serve counties or districts. The chief value lies in indicating the competitive

situation. The data are classified in four regions, metropolitan, metropolitan influenced, lower peninsula, and upper peninsula. "Michigan Municipal Wages and Salaries 1957," Information Bull. No. 79, Michigan Municipal League, 205 S. State St., Ann Arbor; $3.50.

What's Ahead in Manpower

"Our Manpower Future—1955–1965" summarizes the manpower implications of population trends for the coming decade. Two new dimensions have been added to the manpower problem—a decrease in the percentage of the population in most productive years, 25–44, and the quality of the labor force. "Brawn in a worker is no longer enough. Technological developments in the years ahead will demand a labor force possessing a high degree of skill and creativeness."

The implications for the educational system, industrial and professional training programs, and the planning for most effective use of personnel have relevance for public health administrators and personnel directors. The brochure, prepared by the Department of Labor, is well printed and its data made graphic through charts. U. S. Government Printing Office, Washington 25, D. C. 30 cents.

Recommended Radiation Exposure Reduced

The National Committee on Radiation Protection has recommended a reduction to approximately one-third the former levels in the maximum permissible dose of radiation to which individuals should be exposed. The new maximum is 5.0 roentgens per year, equivalent to 0.096 r. per week. (Background and other x-rays of natural origin deliver approximately 0.1 r. per year. Radiation delivered by individual medical x-ray procedures varies from 0.5 to 5.0 r.) The committee further recommends that at any age a person should "not have received a dose greater than 5 times the number of his age over 18."

Copies of the recommendations available from L. S. Taylor, National Committee on Radiation Protection, National Bureau of Standards, Washington, D. C.

Credit Lines

The Journal cannot furnish copies of items mentioned in Credit Lines. Please send requests to the addresses given.

Oily Substances and Water Quality

Another in the series of technical reports published by the State Water Pollution Control Board of California is "Report on Oily Substances and Their Effects on the Beneficial Uses of Water." As with others in the series, this report was prepared by Dr. J. E. McKee, professor of sanitary engineering, California Institute of Technology. The report includes a statement of conditions found in an over-all survey of state waters, recommendations to the State Water Pollution Control Board, laws pertaining to oily substances, sources, characteristics and properties of oily waters and their effect on the beneficial uses of water. A limited number of copies are available for free distribution to officials involved in water pollution control activities, educational institutions, and libraries. To others, $1.25; from the Board, Room 610, 721 Capitol Ave., Sacramento 14, Calif.

Special Camps for the Handicapped

To meet "the need for a resource list of camps serving the handicapped," the American Camping Association, with the help of the American Academy of Pediatrics and the National Society for Crippled Children and Adults, has published a 52-page "Directory of Camps for the Handicapped." The camps are listed alphabetically by states, giving location, sponsor, handicap accepted, camp season, period, and age and sex groups accepted. An index lists camps separately by handicapped group accepted—12 specific groups and one unclassified. More than 60 per cent of the 182 camps listed serve the orthopedically handicapped—a total of 113. Many of the camps serve more than one group of handicapped. One or more camps are reported for 37 of the 48 states. However, the camps are not all restricted to residents of the state in which they are located.

The directory is available from the American Camping Association, Bradford Woods, Ind., or the National Society for Crippled Children and Adults, 11 S. La Salle St., Chicago; 50 cents.

A Library Health Alcove

The Cincinnati Public Library has a counter called "Your Health Alcove." Here, reportedly, "up-to-the-minute health information is available to every one." The Alcove is the result of cooperative planning over a number of years by community agencies under the leadership of the Public Health Federation. It is an established policy to supply only preventive material and to screen books for authenticity by the qualified staffs of the health agencies.

The Alcove began operation in January, 1955, in the Science and Industry Department when the library moved into its new quarters. It now has scores of books and thousands of leaflets are now on the shelves. In 1956 more than 3,000 leaflets were distributed to the public. A third of the questions received by the Science Department have been found to involve some phase of health.

But the Alcove does not merely provide leaflets and answer questions. A series of monthly evening lectures by medical experts has been popular. A

monthly book list, "Health Highlights," is built up from the requests that are most frequent. Teachers and group leaders, writers and reporters use the material. It is expected that eventually that the Alcove will be a full division of the Science and Industry Department.

HEW's Services to Older Persons

All wrapped up in a single package of eight pages are the details of direct or indirect services to aging persons provided through the activities of the federal Department of Health, Education, and Welfare. The services number a baker's dozen; they are provided through the Office of the Secretary and the four divisions of HEW—the Public Health Service, the Social Security Administration, the Office of Education, and the Office of Vocational Rehabilitation.

Recent developments, current programs, and proposed expansion are described together with appropriations requested for fiscal 1957.

This summary is provided in the February 11 (No. 5, 85th Congress) Social Legislation Information Service, "a nonprofit association supported by contributions and subscriptions." It has done a real service in pulling this information together. 1346 Connecticut Ave., N.W., Washington 6, D. C.

Health and Safety Film Strips

"Be Healthy," "Go Safety," are health and safety film strips in two sets, one designed each for the intermediate and primary grades. The newer set for primary grades has five items with such titles as Let's Visit the Dentist, Let's Get Ready for School, and Let's Stand Tall. The safety set includes Safety at School, Along the Way, and At Home.

For the intermediate group there are four health film strips—on breakfast, the common cold, toothache, and grooming. Three safety strips deal with birth, home, school, and bicycle safety.

The authors are Hester Beth Bland and Malcolm J. McLelland, health education consultants, Indiana State Board of Health. The American Medical Association, the American Dental Association, and the National Safety Council were consulted in the production.

Each film strip in the sets has from 30 to 45 frames; each is priced at $5.50 with some reductions per set. Society for Visual Education, 1345 Diversey Parkway, Chicago 14.

Social Services in New York City

"Social and Health Agencies of New York City, 1956–1957" is now available. This biennial listing of the broad spectrum of social agencies serving the eight million people of New York City now runs to more than 600 pages. This volume, without which it is impossible to imagine any social agency in the city could function effectively, is prepared under the sponsorship of the Committee on Information Services of the Community Council of Greater New York. Published by the Columbia University Press from which it may be purchased. 2960 Broadway; $7.50.

New Health Services Promotion Tool

The "10 Tips Toward Tax-Supported Community Health Services," published by the National Advisory Committee on Local Health Departments, is a new tool for the "people who want better health services." The many authors, delegates to the seventh and eighth annual meetings of the committee, assure people that "every community has the talent to organize a campaign for good health services."

The pamphlet then proceeds with pointers on how to organize, how to find the power structure of the community, how to deal with costs in terms

of benefits, on timing, and on publicity. And most important of all, "enlist the broadest possible support," including not only health workers who are the already "saved," but the professional societies, local officials, citizen, service, labor, and business groups—and always the medical society at the earliest possible stage.

The 24-page pamphlet is done in black and white with a two color cover. It was produced in the National Health Council's letter shop and is a good illustration of what can be done at small cost by typing and offset. National Health Council, 1790 Broadway, New York 19; 25 cents, graduated quantity reductions to 12 cents for 500 or more copies.

A Hospital Administration Magazine

"Hospital Administration" began publication in the fall of 1956 as the quarterly journal of the American College of Hospital Administrators. The first issue of some 50 pages is devoted to a symposium on "Human Relations in Administration," an article on "Hospital Trusteeship," and the beginning of a bibliography of case studies in hospital administration as recounted by candidates for American College of Hospital Administrators Fellowship. American College of Hospital Administrators, 620 N. Michigan Ave., Chicago 11; $5 per year.

Housing Control System

Adequate records to show what was, what is, and how it was done is necessary for any active program. A city health department housing program is no exception. Frank J. Vidor, director of the Housing Bureau, Baltimore Health Department, has summarized its housing administrative control methods in "A Record Control System for Housing Law Enforcement Activities." The three major subjects are Selected Records and Procedures for Their Use, Miscellaneous Records, and Hypothetical Case, the latter representing the steps taken in developing a typical legal case. Ordinances that serve as the basis for the Health Department action appear in an appendix.

Available from the Housing Bureau, Baltimore Health Department, Baltimore 2, Md., or the Demonstration Program Branch, Urban Renewal Administration, Housing and Home Finance Agency, Washington 25, D. C., whose support made publication of the report possible.

Public Health in Honduras

The 14th Annual Report for the fiscal year 1955–1956 of the Servicio Cooperativo Interamericano de Salud Publica of the Republic of Honduras records what can be and is being done by cooperation in public health. Sanitation and public health nursing receive chief emphasis, but recognition is also given to good business administration. The importance placed on not only inservice training but more formal training, as afforded by scholarships, is good to note. As with other Servicio programs, part of the funds are provided by the United States. During the 14 years of operation to June, 1956, one-sixth of the funds were provided by the United States government, almost half by the Honduran government, and the balance from district or local governments.

The mimeographed report is illustrated with good photographs and charts. Paul S. Fox is director of the Servicio.

What Health Councils Are Doing

The National Health Council has initiated a series of annual summaries designed to exchange information about local health council activities. The 1956

summary is in two parts, one distributed in June, a second in November. The activities were selected from reports submitted by the councils to illustrate the varied activities and to serve as a stimulus to program planning of councils generally.

Health careers activities, health education by radio and television, campaigns for development or better organization and support of local official health services, directory of services, studies as to health needs, development of special services for the handicapped, mental health, alcoholism and other services, immunization campaigns, community health week, and a weight control project are among the many activities reported in which a local council shared or stimulated.

The two mimeographed reports are available from the National Health Council, 1790 Broadway, New York 19.

The Latest About Venoms

"Venoms—Symposium Volume No. 44," presents more than 60 scientific papers given at the International Conference on Venoms of the American Association for the Advancement of Science. Included in the papers are discussions of such topics as poisonous fishes, venomous snakes and insects, chemical components of venoms, clinical uses of venoms, and the treatment of many kinds of envenomation. 1515 Massachusetts Ave., N.W., Washington 5, D. C.; $9.50 to nonmembers, $8.25 to members.

1958 Fulbright Educational Grants

"Educational Exchange Grants" by the Department of State outlines the opportunities in and procedures for applying for grants for study abroad under the Fulbright Act or the Convention for the Promotion of Inter-American Cultural Relations. Applications began to be received in May and must be completed by October 31 to become effective in 1958.

The booklet gives detailed information for Americans who want to study abroad and for foreigners who wish to study in the United States. Benefits, qualifications, where to apply, how selections are made are outlined separately for teacher openings in elementary or secondary schools abroad, for lecturing or teaching in a university, for doing advanced research work, or for specialist lecturing.

The information booklet is available from the Government Printing Office, Washington, D. C.; 15 cents.

Annual Reports

"Together for Health—Deepening Dimensions" is the 1956 annual report of the National Health Council, a short and dramatic story of the year's activities through which a constantly deepening impress is being made upon the health of the nation by the "togetherness" of the 59 national organizations with health interests that now make up the Council. The report is short and so interestingly written that it will inevitably be read at a sitting—and then read again. National Health Council, 1790 Broadway, New York 19; free.

"Lifelines to the Heart" is the 1956 annual report of the American Heart Association and its 56 affiliates in 47 states, the District of Columbia, Alaska, Hawaii, and Puerto Rico. It is a beautifully printed and illustrated pamphlet in which are described research as the "source of the lifeline" to the individual heart, professional education, community service as "lifelines in the community," education and information as "lifelines of hope," and fund raising as "lifeblood for the lifeline." American Heart Association, 44 East 23rd St., New York 10.

Books and Reports

All reviews are prepared on invitation. Unsolicited reviews cannot be accepted.

Challenges to Contemporary Medicine—By Alan Gregg. New York: Columbia University Press (2960 Broadway), 1956. 120 pp. Price, $3.00.

This small and delightful volume reproduces in print the sixth Bampton Lecture in America, delivered at Columbia University in 1953. Dr. Gregg is now vice-president emeritus of the Rockefeller Foundation and is perhaps the foremost philosopher of medical education in the United States. He received a special 1956 Albert Lasker Award from the American Public Health Association.

Dr. Gregg's many admirers will anticipate a volume full of meat, easy to read, and anecdotal in style. They will not be disappointed. My teen-age daughter found it good going. Should Dr. Gregg's persuasive pen not convince you on every point, the reading of this book will provide a refreshing and intellectually provocative evening. Medical administrators, especially deans of medical schools, should make this book required reading for their board members and administrative superiors.

The term, "Great Medicine," is introduced "to include the teaching, the practice, and the research in medicine, in all its roots as well as its branches." Great Medicine is viewed from a historical and sociologic perspective with the author's personal opinion on many points.

In this volume, Dr. Gregg develops a major thesis:

1. Medicine has advanced to such a degree that it is as essential to modern man as food, clothing, and shelter.

2. Its continuation is dependent upon medical education and research, but the medical schools face such critical financial problems that they should be placed on the national "danger list."

3. Voluntary prepayment plans, with an annual premium of $100 per person, could finance adequately the best in medical care, education, and research.

Dr. Gregg touches upon many related topics. He documents the accomplishments of Great Medicine. He scolds the American people for their reluctance to pay for it adequately, while willingly paying for less important commodities. He reprimands boards and administrators of hospitals and insurance programs for not recognizing that the costs of teaching and research are a part of the cost of medical care. He deplores the fact that universities must still finance patient care for their educational program, but extols the quality of medical care in a teaching hospital.

Dr. Gregg discusses voluntary prepayment insurance (which he favors), group practice, coordinating the services of specialists and ancillary personnel (doctors should study personnel management), the ecology of medical students, how to select students who will be service-motivated, and many other subjects.

The volume is spiced with picturesque language and quotable quotes, some original with Dr. Gregg, others borrowed for the occasion. One example may suffice:

"I plead with you to exercise some measure of historical sense, for only so can you realize that it is nearer 90 per cent than 10 per cent of you who are alive and in your present state of health, thanks to the application of medical science. . . . In the Churchillian triad of blood, sweat and tears, you

seem to haggle over expending too much sweat (or money) and forget the immense spiritual and vital economy of being spared the tears and the blood."

WILLIAM R. WILLARD

Biochemical Individuality — The Basis for the Genetotrophic Concept—By Roger J. Williams. New York: Wiley (440 Fourth Avenue), 1956. 214 pp. Price, $5.75.

Throughout history physicians have paid more attention to the individual than to the average characteristics of the population. Biologists, on the other hand, have treated individual variations as tiresome obstacles to the recognition of the basic generalities they seek to discover. Lately, the physician-become-medical-scientist is increasingly interested in averages, while his biologist counterpart is beginning to question whether these averages may not conceal some of the very principles of biology he seeks to elucidate.

It is timely, then, that a biochemist, traditionally the antithesis of the clinician, should turn his attention to the fact that we individuals are not merely recognizably different in appearance; we have each our personal biochemical and physiologic characteristics and these variations have meaning for the understanding of our health and behavior. Perhaps biometricians will carp that Professor Williams comes late to an appreciation of what is their stock in trade, but the present book, with its almost innumerable examples of variability, does more than illustrate the need for statistical analysis in research. The reader cannot avoid being left with a greater awareness of the importance of quantitative differences between individuals and the fact that many of our problems of function and behavior must be studied in this light. The implications for public health deserve consideration.

ANCEL KEYS

A Manual of the Common Contagious Diseases—By Philip Moen Stimson and Horace Louis Hodes (5th ed.). Philadelphia, Pa.: Lea and Febiger (600 Washington Sq.), 1956. 624 pp. Price, $8.50.

Stimson's well known manual has been extensively revised, with the assistance of a co-author, nine years after the last edition. The chapter on antibiotics and sulfonamides, for instance, has been considerably expanded and the chapter on scarlet fever enlarged to include other streptococcal infections. The text deals with a selected group of about a dozen contagious diseases—some no longer common—based largely on the senior author's wealth of experience with the material of the former Willard Parker Hospital.

The best chapters are still the classical discussions of poliomyelitis, occupying almost one-fifth of the text, of diphtheria and of smallpox. Some of the diseases so splendidly treated in this manual are disappearing because of advances in immunization and antibiotics; therefore, Dr. Stimson's abundant observations will never again be duplicated in this country, and students nowadays have very little, if any, chance to acquire this knowledge first hand. However, none of these infections have been completely eradicated and epidemics may crop up at any time anywhere. For this reason, and because of the up-to-date information on immunizations—ever necessary to hold the line—the careful consideration of differential diagnosis and the excellent detailed section on "General Management of Contagious Diseases" in hospitals, other institutions, and at home this book is warmly recommended to physicians and nurses. The text is amply illustrated by about one hundred figures and photographs, some in color, and includes new tables on antimicrobial and immunizing agents.

GERTRUD WEISS

Myocardial Infarction. An Epidemiologic and Prognostic Study of Patients from Five Departments of Internal Medicine in Oslo 1935–1949.* † Oslo, Norway: Ulleval Sykehus, Life Insurance Companies' Institute for Medical Statistics at the Oslo City Hospitals, 1956. 58 pp.

This is an excellent example of a statistical analysis of hospital records for epidemiologic and prognostic data. The outstanding contribution is its critical evaluations and the emphasis on the potential bias of hospital record data when applied to the general population.

The records from five departments in three hospitals, apparently with uniform diagnostic criteria, are included in the analysis. These hospitals (one private) had 625 beds out of approximately 1,000 in the area for internal medicine. The number, size, and type of other hospitals (and their myocardial admissions) in Oslo and in nearby Aker (made a part of the City of Oslo in 1948) were not presented. The material included 1,613 patients diagnosed myocardial infarction who were discharged alive (929) or died in the hospitals (684). In addition to analyses of the material as a whole, certain diagnostic and prognostic subgroups were evaluated. The findings are compared by relating them to the characteristics of the population of Oslo (including Aker) on the basic assumption that "the number and characteristics of patients in the five included hospital departments reflect the corresponding aspects of the disease in Oslo in the years 1935 to 1949." It was emphasized that this assumption may not be correct because of the type of sample, the population changes in the area, the inclusion of the war years, the fact that many people may have been treated at home, and because admissions to hospitals may vary with age, sex, occupational group, and social strata.

This study emphasizes some of the factors which must be taken into account in future designs of epidemiologic field studies of this disorder.

E. GURNEY CLARK

A. D. L. Activities of Daily Living. Rehabilitation Monograph X—Testing, Training and Equipment—By Edith Buchwald Lawton. New York: Institute of Physical Medicine and Rehabilitation, New York University-Bellevue Medical Center (400 E. 34th St.), 1956. 59 pp. Price, $1.00.

This monograph presents "the basic principles underlying the teaching and testing of activities of daily living, as well as the equipment involved in such a program." The subject is developed under four topics: (1) what are activities of daily living and how are they taught; (2) combined outline and worksheet for testing and training A. D. L. and uses of same; (3) A. D. L. test currently used at Institute of Physical Medicine and Rehabilitation, New York-Bellevue Medical Center; and (4) A. D. L. room and equipment.

The key to the pamphlet seems to be in a sentence quoted from the text—"To stimulate and teach the patient in terms of daily necessities is not something that just happens or that is picked up 'naturally' as he goes along, but it has to be carefully planned and practiced and the teaching towards this end should be recognized as an important program."

The worksheet is divided into nine major groups. A code is used to record the patient's progress of what he could do when starting and what he can do after training. The use of the code keeps detailed notes to a minimum, but would require study and use to gain skill in recording and evaluating the

* Report No. 3, Life Insurance Companies' Institute for Medical Statistics at the Oslo City Hospitals.

† Also published as Supplement to Acta med. Scandinav. Vol. 154, 1956.

findings. A progress chart includes summaries of findings from the worksheets at monthly intervals.

The A. D. L. test is a valuable source of information to all members of the rehabilitation team. Teaching and training according to the specific needs of the patient can be given by the physical therapist, occupational therapist, or nurse, each worker supporting the other. For how the teaching and training is accomplished, the reader will need to use other sources of reference.

The team members and the patient will find this approach to rehabilitation through the development of skill in activities of daily living a most stimulating and meaningful application of therapy. C. MAY CHITWOOD

Encyclopedia of Instrumentation for Industrial Hygiene—University of Michigan, Institute of Industrial Health and School of Public Health, 1956. Technical Editors: C. D. Yaffe, A. D. Hosey, and D. H. Byers. Ann Arbor, Mich.: University of Michigan Publications Service, 1956. 1243 pp. Price, $30.00.

This encyclopedia is good news for anyone confronted with selecting an instrument for measuring chemical and physical environmental factors of hygienic significance. Prepared primarily for workers in industrial hygiene and community air pollution, the encyclopedia also will have wide application in other areas, such as teaching, research, and industrial operations.

The volume is divided into seven sections dealing with instrumentation relating to industrial air contaminants; laboratory analytical methods; air pollution and meteorology; air velocity and metering; sound and vibration; ionizing radiation; ultraviolet, visible and infrared energy. Each section includes: (1) a comprehensive review of instrumentation in that area, with emphasis on methods and requirements; (2) technical papers discussing special technics and problems; and (3) discussion of available instruments, including manufacturers' specifications, performance, photographs, diagrams, and other pertinent material. The encyclopedia is documented throughout with references and contains an appendix of tables, charts, conversion factors, and other useful information.

The editors have accomplished a greatly needed yet most difficult task of bringing together in one source information on the myriad of instruments used in industrial hygiene, community air pollution, and allied fields. We are indeed grateful to them, for the encyclopedia is destined to become a basic reference. One only wonders if and how it is to be kept up to date in this fast changing field.

LEWIS J. CRALLEY

Round Table on State Health Councils—Report of the Consultation on State Health Councils, March 19–20, 1956. New York: National Health Council (1790 Broadway), 1956. 30 pp. Price, $.50.

State health councils have a real struggle for existence. The major difficulty is getting money on which to run. They are no different than any other health or welfare agency. They can not be very effective unless they have a paid executive and an adequate budget. Most of the 20 listed in this report as "going concerns" have neither. One has a budget of $60 a year. The fact that councils so handicapped can manage to continue and actually get some things done may be taken as evidence that such coordinating agencies are needed and that some dedicated souls are willing to contribute their services to keep them going. Two or three do have paid staff and one affluent council boasts an annual budget of $25,000.

The story, rather more optimistically presented than in this review, is con-

tained in the 30-page, printed brochure "Round Table on State Health Councils," published by the National Health Council.

State health officers, state medical associations, voluntary state health agencies, local health councils, heads of schools of public health, particularly, will find this well organized and attractively written report informative and useful.

Representatives of 18 state health councils, members of the National Health Council's Advisory Committee, and a number of consultants attended the Round Table which was held in New York in March, 1956.

Persons interested in state health councils can learn from the report such things as these: how they came to be organized and why; membership patterns; their relations to local health councils, to state medical societies, and to state health departments; their activities and accomplishments; what health officers think about them.

BLEECKER MARQUETTE

Feeding Your Baby and Child—By Benjamin Spock and Miriam E. Lowenberg. Boston, Mass.: Little, Brown (34 Beacon St.), 1955. 226 pp. Price, $3.75.

This book is a companion volume to Dr. Spock's Common Sense Book of Baby and Child Care which has become a household byword in millions of American homes. Dr. Spock, in collaboration with Miriam E. Lowenberg, head of the Department of Food and Nutrition at Pennsylvania State University, has provided for the reader modern facts bearing on infant and child feeding. The combined basic and clinical approach bridges the gap from theory to practice.

The authors are most judicious in selecting information on the art and science of infant and child feeding and presenting it interestingly, cleverly, and authoritatively throughout the nine chapters that comprise this volume: The Art of Feeding Children; Beginning at the Beginning (in Utero); Diet During Infancy; Recipes, Menus Too Are Important; Setting the Stage for Children's Eating; There's a Party in the Air; Diet During Illness; and Feeding Problems. The combined practical and clinical approach provides a positive and reassuring consideration in discussions on proper diet for the pregnant and nursing mother, the infant's formula, weaning, and introducing solid food to the infant, changing from the infant's diet to the diet of the child and that of the whole family.

Of particular interest are the helpful hints on practical problems, such as humoring a child's appetite, influencing his attitude toward food through aesthetic qualities of color, texture, and shape of food. A large number of carefully chosen recipes and illustrative menus for each season of the year will be helpful to the busy mother and assure for her an adequate and varied diet for her child. This valuable book has a detailed table of contents, a general index, and an index of recipes so that one can locate quickly particular information. It is recommended to mothers, pediatricians, and others responsible for the care of infants and children.

ICIE MACY HOOBLER

Pharmacopeia of the United States of America (15th rev.)—Official from December 15, 1955. New York: U. S. Pharmacopeial Convention (46 Park Avenue), 1956. 1178 pp. Price, $10.00; and **The Dispensatory of the United States of America** (25th ed.)—By Arthur Osol and George E. Farrar, Jr. Philadelphia, Pa.: Lippincott (E. Washington Sq.), 1955. 2139 pp. Price, $25.00.

It is a wholesome thing for public health workers to pause occasionally and recognize the fundamental place

which sound pharmacopeia standards hold in the protection of the public health. It is gratifying to see so many of those known in public health who are identified on the committees and panels and the care with which standards have been set for biologicals, products useful in nutrition, and among drugs in general. It is good to know that in almost every instance the standards of this volume are at least as high as those of the "International Pharmacopeia" with which it is linked in many respects. This is one world in which we live and products produced under these standards are world-wide in their distribution. In this edition Latin titles have been dropped except where they differ substantially from the English names.

The "Dispensatory" lists in amazing detail the drugs recognized by the U. S. Pharmacopeia, the British Pharmacopeia, and the international volume. It is safe to say that few volumes of public health reference are so widely distributed or so readily available for reference through every pharmacy. The authors of both these volumes are to be congratulated on their achievement.

REGINALD M. ATWATER

Pregnancy and Birth—By Alan F. Guttmacher. New York: Viking Press (625 Madison Ave.), 1957. 335 pp. Price, $4.50.

The gamut of human reproduction in all its phases in the human female is covered in this book for expectant parents.

In an almost conversational style the author brings a quarter of a century of sound obstetric practice and judgment in review before the reader. Stressing accepted knowledge brought up to 1957 vintage, Guttmacher aims at educating the patient for childbirth and succeeds in this goal.

The facets of preconceptional, antepartum, intrapartum, and postpartum areas which raise questions in the patient's mind are thoroughly expounded and well documented. Throughout the treatise is the security generated from sound exposition of fact and the constant reiteration of the safety of childbirth to the parturient in modern obstetric practice. The mental health and emotional attunement of the patient is thus subtly and inconspicuously woven into the text in a gratifying manner.

Written expressly for the layman, the book is a gem as well for the health educator and the conference nurse who has occasion to deal with the tutelage of expectant parents. Practicing obstetricians may with assurance recommend the book to their patients.

EDWIN M. GOLD

Dutton Series on Sex Education, The: A Story About You, 63 pp. Price, $2.00; **What's Happening to Me?** 63 pp. Price, $2.00; **Learning About Love,** 64 pp. Price, $2.00; **Sex Facts and Attitudes,** 88 pp. Price, $2.50; **Parents' Privilege,** 64 pp. Price, $2.00. By Marion O. Lerrigo and Helen Southard in consultation with Milton J. E. Senn. New York: Dutton (300 4th Ave.), 1956.

The first named volume provides for the child nine to 12 a good review of basic sex facts which ordinarily have been learned much earlier. Beyond these it explains well pubertal changes in both sexes, sometimes using words which will require parental explanation. Some information, such as that dealing with a nocturnal emission, seems to this reviewer out of place in a book for children as young as nine or 10.

The second volume, for boys and girls 12–15, likewise reviews these facts and goes beyond them to a wise and helpful discussion of such matters as boy-girl friendship, steady dating, petting, venereal disease, and good management of the normal physical attraction between the sexes.

The third volume, after a brief and

more advanced treatment of "basic facts," deals extremely well with the nature of love, mate-choice, premarital sexual relations, "making marriage work," and other matters definitely in the range of thinking of those 16–20.

"Sex Facts and Attitudes" is addressed to parents and others who have "any responsibility for the sex education of children or youth." It is essentially a guide to the facts, methods, and values involved. It provides excellent description of the stages of sexual development from infancy on, and properly insists upon parental responsibility for teaching their children, by word and example, the facts and values of human sexuality. It also offers much needed encouragement for those who are hesitant about doing so, together with many practical suggestions about what to do, where to get whatever help is needed, and what aid may be expected from the school, church, youth agencies, and various local, county, or state health agencies. Best of all is the clear and repeated emphasis on developing sound attitudes about "family life, marriage, the nature of love, how it is expressed, the wonder, dignity and beauty of human sexuality" and the fact that sex education consists of much more than "telling the facts of life."

This volume is the key to the series and should be read and reread first by parents. A minor limitation to its usefulness is the occasional use of medical or other words and phrases which are not in the vocabulary of many parents. There is also some inadequacy in discussing homosexuality, probably due to the necessity of brevity.

"Parents' Privilege" provides many excellent detailed suggestions for dealing with the child up to nine, but lapses into referring to sperm as "a special kind of seed."

This series deserves and is bound to be widely used because of its value and the confidences inspired by the fact that it has the approval of the Joint Committee on Health Problems of the National Education Association and the American Medical Association. The material was originally published by the American Medical Association in very attractive, well illustrated, and decorated pamphlets at 50 cents each. With no change in text and few illustrations and decorations it is equally attractive in this small book format.

ROY E. DICKERSON

Human Problems of a State Mental Hospital—By Ivan Belknap. New York: Blakiston Division, McGraw-Hill (330 West 42nd St.), 1956. 277 pp. Price, $5.50.

This book reports a three-year study of the social organization of a state hospital in the South by a sociologist and his staff. It is of particular interest as it is the first study of its extent and kind to be made of a state mental hospital. Recommendations for reorganization based on the interpretation of findings are proposed by the author.

The wide gap between psychiatric theory and practice from the patient's admission through discharge is pointed up throughout the report. The persistent problems of overcrowding, understaffing, and the ubiquitous attitude of hopelessness in relation to patients' recovery and hostility of personnel toward each other are analyzed in relation to the historical development of the hospital.

A detailed description of the organization is given for all levels of administration, executive through aide. Both formal and informal organization is presented. The informal status systems, which are diametrically opposed to the formal, exercise the control. The reasons for the covert and rigid informal system is viewed as a means of survival rather than caprice by the observers who worked as attendants and volunteers. The explanation of the development of

the vagaries of the system on the basis of expediency is convincing, albeit depressing.

Dr. Belknap holds that "all human problems outlined in the report are directly or indirectly the result of a failure of those concerned with mental health to see and act upon the incompatibility of centralization, large size and residual welfare responsibility of the hospital with the spirit and most of the techniques of modern psychiatry." His recommendations are based on the above premise and include a reduction in patient-load by the exclusion of all patients who do not have specific mental illness and a thorough alteration in the administrative organization of the hospital. Many will take exception to the proposed realignment. However, given the first condition, this and alternative organizational plans should be studied and tried.

Appendixes, one with references for each chapter and one on theory and methods, enhance the report.

RUTH E. SIMONSON

Rehabilitation Literature 1950–1955—Compiled by Earl C. Graham and Marjorie M. Mullen. New York: Blakiston Division, McGraw-Hill, 1956. 621 pp. Price, $13.00 cloth.

Since 1940 one of the most valuable services of the National Society for Crippled Children and Adults has been its monthly "Bulletin on Current Literature," now called "Rehabilitation Literature." The bibliographic listings in this publication have consistently been well chosen, references have been complete and well indexed, and annotations have been clear and concise.

The librarians of the National Society responsible for this publication, Earl C. Graham and Marjorie M. Mullen, have selected 5,214 references relating to medical care, education, employment, welfare, and psychology of handicapped children and adults published between January, 1950, and December, 1955, for this new rehabilitation bibliography. The result is an extremely valuable reference tool for all those seriously concerned with rehabilitation and services for the handicapped, irrespective of their individual disciplines or professions.

The entries concerning all significant articles, pamphlets, and books published in this period are grouped conveniently under such headings as Cleft Palate; Cleft Palate-Delaware; Cleft Palate-Pennsylvania; Cleft Palate-Wisconsin; Cleft Palate-Equipment; Cleft Palate-Etiology; Cleft Palate-History; Cleft Palate-Institutions; Cleft Palate-Medical Treatment; Cleft Palate-Nursing Care; Cleft Palate, Parent Education; Cleft Palate-Psychological Tests; Cleft Palate-Speech Correction; Cleft Palate-Statistics. In addition, there is a complete author and subject index.

EUGENE J. TAYLOR

Sewage Treatment—By Karl Imhoff and Gordon M. Fair (2nd ed.). New York: Wiley (440 Fourth Ave.), 1956. 338 pp. Price, $7.50.

This book like the first edition has developed the subject of sewage treatment in a very concise and systematic way. It provides comparatively simple but somewhat technical reading. It points out many of the factors that the civil-sanitary engineer should have. It even points out something that is greatly lacking among engineers in general, that is, that engineers (particularly civil and sanitary) should never forget that they must master not only the technical details, but also the economic and social implications of their construction and development program.

The layout of this book is excellent in that it begins with the composition of sewage, it goes through the entire development of various types of treatment, general layouts, and processes until the ultimate disposal. It also includes

an excellent chapter on industrial wastes which is well covered in the short space allowed in this book. It sets up a chapter on the self-purification of receiving streams which, in many cases, is forgotten, and it provides for the student, the engineer, and the reader much information they can use in their work.

It is the opinion of the reviewer that this book should be a must in the teaching of sanitary engineering in all of the universities. It is one that all students can learn a great deal from without getting too involved. It is a book that every consulting engineer should have and one that every sanitary engineer in the field of public health at all levels will have. It brings up to date all of the new developments since the first edition was written. The volume provides a very useful manual for all engineers in this field.

DAVID B. LEE

Books Received

Listing in this column acknowledges the receipt of books and our appreciation to the senders. Space and the interests of readers will permit review of some, but not all, of the books listed.

CANADIAN CANCER CONFERENCE VOL. 2. PROCEEDINGS OF THE SECOND CANADIAN CANCER RESEARCH CONFERENCE, HONEY HARBOUR, ONTARIO, JUNE 17–21, 1956. Edited by R. W. Begg. New York: Academic Press, 1957. 398 pp. Price, $8.50.

COLD INJURY. TRANSACTIONS OF THE FOURTH CONFERENCE, NOVEMBER 7–9, 1955. M. Irene Ferrer, Editor. New York: Josiah Macy, Jr. Foundation, 1956. 371 pp. Price, $5.95.

CONTEMPORARY DEVELOPMENTS IN OCCUPATIONAL HEALTH. THIRD ANNUAL WORKSHOP IN INDUSTRIAL NURSING, MAY 25–26, 1956. Oklahoma City, Okla.: University of Oklahoma Medical Center, Department of Preventive Medicine and Public Health, 1957. 168 pp. Price, $2.00.

DIE STORUNGEN DER SCHRIFTSPROCHE (AGRAPHIE UND ALEXIE). A. Leischner. New York: Intercontinental Medical Book Corp., 1957. 288 pp. Price, $7.15.

ECONOMIC AND SOCIAL SECURITY. John G. Turnbull; C. Arthur William, Jr.; and Earl F. Cheit. New York: Ronald Press, 1957. 539 pp. Price, $6.00.

ESSENTIALS OF NUTRITION. Henry C. Sherman and Caroline Sherman Lanford (4th ed.). New York: Macmillan, 1957. 505 pp. Price, $4.99.

ESSENTIALS OF SOCIAL GROUP WORK SKILL. Helen U. Phillips. New York: Association Press, 1957. 180 pp. Price, $3.50.

EXPERIMENTAL PSYCHOLOGY AND OTHER ESSAYS. I. P. Pavlov. New York: Philosophical Library, 1957. 653 pp. Price, $7.50.

EXPERT COMMITTEE ON RABIES (THIRD REPORT). World Health Organization Technical Report Series No. 121. New York: Columbia University Press, 1957. 32 pp. Price, $.30.

FIGHT FOR FLUORIDATION. Donald R. McNeil. New York: Oxford University Press, 1957. 241 pp. Price, $5.00.

FLEXIBLE RETIREMENT. EVOLVING POLICIES AND PROGRAMS FOR INDUSTRY AND LABOR. Edited by Geneva Mathiasen. New York: Putnam's, 1957. 226 pp. Price, $3.75.

FREEZING PRESERVATION OF FOODS. VOLUME I—FREEZING OF FRESH FOODS (3rd ed.). Donald K. Tressler and Clifford F. Evers. Westport, Conn.: Avi Publishing, 1957. 1,240 pp. Price, $18.00.

GESTATION. TRANSACTIONS OF THE THIRD CONFERENCE MARCH 6–8, 1956. Claude A. Villee, Editor. New York: Josiah Macy, Jr. Foundation, 1957. 253 pp. Price, $4.75.

GETTING READY FOR PARENTHOOD. Mario A. Castallo. New York: Macmillan, 1957. 192 pp. Price, $3.95.

GOVERNMENTAL PROBLEMS IN THE CHICAGO METROPOLITAN AREA. Edited by Leverett S. Lyon. Chicago, Ill.: University of Chicago Press, 1957. 283 pp. Price, $8.00.

INDUSTRIAL DEAFNESS—HEARING, TESTING AND NOISE MEASUREMENT. Joseph Sataloff. New

York: McGraw-Hill, 1956. 333 pp. Price, $8.00.

JOINT WHO/UN ADVISORY GROUP ON SOCIAL AND MEDICO-SOCIAL WORK. AMSTERDAM, DECEMBER 5–9, 1955 Report. Geneva, Switzerland: United Nations European Office of the Technical Assistance Administration. 38 pp.

LEUKEMIAS, THE: ETIOLOGY, PATHOPHYSIOLOGY, AND TREATMENT. HENRY FORD HOSPITAL INTERNATIONAL SYMPOSIUM, 1956. Edited by John W. Rebuck; Frank H. Bethell; and Raymond W. Monto. New York: Academic Press, 1957. 711 pp. Price, $13.00.

LONG WAY FORWARD, A. THE BIOGRAPHY OF CONGRESSWOMAN FRANCES P. BOLTON. David Loth. New York: Longmans, Green, 1957. 302 pp. Price, $5.00.

MARRIAGE. Earl Lomon Koos (rev. ed.). New York: Henry Holt, 1957. 344 pp. Price, $4.00.

MEDICAL OFFICERS OF HEALTH 1848 TO 1855. AN ESSAY IN LOCAL HISTORY. C. Fraser Brockington. London, England: Medical Officer, 1957. 51 pp. Price, $1.50.

MEDICAL PROGRESS 1957. A REVIEW OF MEDICAL ADVANCES DURING 1956. Morris Fishbein, Editor. New York: McGraw-Hill, Blakiston Division, 1957. 367 pp. Price, $6.00.

MEDICAL SERVICES FOR RURAL AREAS. THE TENNESSEE MEDICAL FOUNDATION. Willman A. Massie. Cambridge, Mass.: Harvard University Press for the Commonwealth Fund, 1957. 68 pp. Price, $1.25.

MENTAL HEALTH AND EDUCATION IN HONG KONG. K. E. Priestley and Beryl R. Wright. New York: Oxford University Press, 1956. 97 pp. Price, $1.20.

METROPOLITAN COMMUNITIES—A BIBLIOGRAPHY. Prepared by Government Affairs Foundation. Chicago, Ill.: Public Administration Service, 1957. 392 pp. Price, $10.00.

MODERN MARRIAGE AND FAMILY LIVING. Edited by Morris Fishbein and Ruby Jo Reeves Kennedy. New York: Oxford University Press, 1957. 545 pp. Price, $5.00.

PLAN FOR MENTAL HEALTH, A. THIS PLAN IS THE RESULT OF A SURVEY OF MENTAL HEALTH NEEDS IN ERIE COUNTY. Buffalo, N. Y.: Council of Social Agencies, 1957.

PROFESSIONAL PRACTICE MANAGEMENT. CONSIDERATIONS PERTINENT TO SUCCESSFUL ADMINISTRATION. B. C. Egerter, New York: Pageant Press, 1957. 504 pp. Price, $15.00.

RADIOLOGICAL HEALTH HANDBOOK. Compiled and Edited by Simon Kinsman. U. S. Department of Health, Education, and Welfare, PHS, Bureau of State Services, Division of Sanitary Engineering Services, Robert A. Taft Sanitary Engineering Center, Cincinnati, Ohio. Washington, D. C.: Department of Commerce, Office of Technical Services, 1957. 355 pp. Price, $3.75.

RIDDLE OF STUTTERING, THE. C. S. Bluemel. Danville, Ill.: Interstate Publishing Co., 1957. 142 pp. Price, $3.50, casebound; $1.50 paper bound; therapy records, $3.00.

SALMONELLOSIS IN ANIMALS. A. Buxton. Bucks, England: Commonwealth Agricultural Bureau, Central Sales Branch, Farnham Royal, Nr. Slough, 1957. 209 pp. Price, 25s.

SAMPLE STUDY ON THE PARTICIPANTS OF A CANADIAN PRE-PAYMENT MEDICAL CARE PLAN IN REGARD TO COSTS, DISEASE EPISODES AND SERVICES. Harding le Riche. Toronto, Ont., Canada: Physicians' Services, 1957. 168 pp.

STERILIZATION IN FOOD TECHNOLOGY. C. Olin Ball and F. C. W. Olson. New York: McGraw-Hill, 1957. 654 pp. Price, $16.00.

STUDY OF NURSING SERVICES IN THE SECONDARY SCHOOLS OF MONTGOMERY COUNTY, MARYLAND, MAY, 1955. Baltimore, Md.: Maryland State Department of Health, Division of Public Health Nursing, 1956. 177 pp.

SWIMMING POOLS AND OTHER PUBLIC BATHING PLACES. RECOMMENDED PRACTICE FOR DESIGN, EQUIPMENT, AND OPERATION OF (10th ed.). The American Public Health Association and the Conference of State Sanitary Engineers. New York: American Public Health Association, 1957. 60 pp. Price, $1.00.

SYSTEMS OF SOCIAL SECURITY. GREAT BRITAIN. Washington, D. C.: International Labor Office, 1957. 73 pp. Price, $.60.

TEACHING NUTRITION. Mattie Pattison; Helen Barbour; and Erecel Eppright. Ames, Iowa: Iowa State College Press, 1957. 212 pp. Price, $3.95.

TRANQUILIZING DRUGS. Harold E. Himwich. Washington, D. C.: American Association for the Advancement of Science, 1957. 197 pp. Price, $5.00; $4.50 to AAAS Members.

WORLD-ATLAS OF EPIDEMIC DISEASES (WELT-SEUCHEN-ATLAS III), Hamburg, Germany: Falk-Verlag, 1957.

WORLD HEALTH ORGANIZATION: A STUDY IN DECENTRALIZED INTERNATIONAL ADMINISTRATION. Geneva, Switzerland: Librairie E. Droz, 1957. 173 pp. Price, 16 frs s.

WORK OF WHO 1956, THE. ANNUAL REPORT OF THE DIRECTOR-GENERAL TO THE WORLD HEALTH ASSEMBLY AND TO THE UNITED NATIONS. New York: Columbia University Press, 1957. 233 pp. Price, $2.00.

A Selected Public Health Bibliography with Annotations

Boosters Questioned—Local British experience is reported which fails to show any great advantage in retaining high levels of immunity to diphtheria by booster doses of toxoid.

ANDERSON, A. Some Observations on Diphtheria Immunization. M. Officer 97, 12:161 (Mar. 22), 1957.

Three-Minute Test—"The work of three Boston research scientists may some day enable medical men to measure more accurately the vision of newborn infants." Only you can know whether you are sufficiently interested to hunt out the paper.

ANON. Vision Testing for Newborn Infants. Sight-Saving Rev. 27, 1:22 (Spring), 1957.

Hopeful Research—This statistical study points out that the real increase in coronary disease has been relatively small. Nevertheless arteriosclerotic heart disease, including coronary, outranks other causes—amounting to 400,000 deaths a year. The Life Insurance Medical Research Fund, currently granting a million dollars annually, is one of the major supports of research against the continuing menace of the No. 1 killer.

ANON. Trend of Mortality from Coronary Artery Disease. Statist. Bull. Metrop. Life Insur. Co. 38, 2:1 (Feb.), 1957.

Good Word Said for Marriage—"Married people experience a lower mortality than persons who remain single, or those whose marriage has been broken by death or divorce. . . . The more favorable record for the married is due also to the healthful way of life that marriage provides. . . . Among men, practically every cause of death . . . recorded a lower rate among the married. . . . The difference in mortality . . . is smaller for women than for men."

ANON. Mortality Lowest in the Married Population. Statist. Bull. Metrop. Life Insur. Co. 38, 2:1 (Feb.), 1957.

Boosters Praised—Canadian experience with poliomyelitis vaccine is reported which adds to the "pro" side of booster doses: postvaccination antibody levels were generally maintained during the prebooster, 10-month period. Booster doses helped materially and no child, among those followed, was without a measurable antibody against each of the three serologic types.

ARMSTRONG, C. W. J., et al. The Antibody Response to Poliomyelitis Vaccine in School Children at the Time of Initial Vaccination and One Year Later. Canad. J. Pub. Health 48, 3:96 (Mar.), 1957.

Cancer Screening—Told here in useful detail is the story of a program for the voluntary cytologic examination, via the Papanicolaou test, of a large group of women. All who had suspicious smears were followed up by a nursing consultant and her experiences with them are of special interest.

BOUSER, M. M. When Cancer Can Be Cured. Nursing Outlook 5, 3:138 (Mar.), 1957.

How We Educate—Our own Bill Griffiths goes abroad to tell others something about the philosophy that animates and steers our still exploratory efforts at influencing the (health) behavior of our native educatees. He does a revealing job and because the presentation is refined and clarified for distant con-

sumption it becomes the more assimilable for home consumption as well.

GRIFFITHS, W. The Educational Approach to Health Work. Health Ed. J. 15, 1:13 (Mar.), 1957.

To Prevent Poisoning—Of the 1,431 poisoning fatalities (in 1955) due to household chemicals, 358 occurred in children under five. We need to know a lot more about extending knowledge of diagnosis and treatment; promoting safe labeling requirements; restricting the distribution of poisons; and educating users.

KERLAN, I. Health Problems Occurring from Household Chemicals Including Drugs. J.A.M.A. 163, 14:1254 (Apr. 6), 1957.

Sanitary Engineering Certification—This account of the birth and infancy of the American Sanitary Engineering Intersociety Board, Inc. (what a mouthful!) is of interest as a bit of public health history, but it also assumes greater moment in the eyes of all who may be concerned with the improvement of professional status in any of the disciplines of the broad public health field.

KIKER, J. E., Jr. Specialty Board Certification for Sanitary Engineering. J. Am. Water Works A. 49, 2:191 (Feb.), 1957.

On the Bright Side—There are grounds for measured optimism that cancer may be controlled, but a great deal has still to be done. This is the conclusion of an address at a conference on, "Public Education on Cancer." The British surgeon discusses ways to this "promised land, which I trust my generation will enter."

RAVEN, D. W. The Prevention and Treatment of Cancer. M. Officer 97, 13:175 (Mar. 29), 1957.

Merited Eulogy—The former editor of the American Journal of Nursing pays her graceful and grateful respects to the late Professor Winslow for his many and matchless contributions to nursing in all its manifestations.

ROBERTS, M. M. We Pay Tribute to Charles-Edward Amory Winslow. Nursing Outlook 5, 3:155 (Mar.), 1957.

For Tired Minds—Rabies in bats has been reported in so many essays in this Journal and its companions in public health that you may have grown—shall we say—objective about the whole matter. If this is so, then you may be both entertained and impressed by the way a highly skilled popularizer can rekindle an interest, even in you, by working over our Journal's coldly scientific papers. Incidentally you may, in the end, be persuaded that something should be done about the situation.

ROUECHE, B. Annals of Medicine—The Incurable Wound. The New Yorker 33, 7:39 (Apr. 6), 1957.

The Same But Different—South African experience in educating young parents about the maintenance of their small children's health is reported in sufficient detail to warrant thoughtful review at this far end of the globe. Distance may lend objectivity as well as enchantment.

STEUART, G. W. Experiences in the Health Education of Mothers. Health Ed. J. 15, 1:7 (Mar.), 1957.

Worker's Emotions—Five Canadian Experts in occupational and mental health meet as a panel to talk over the matter of the worker and his job and what might be done to better this relationship. Short, snappy and provocative.

STOKES, A. B., et al. Mental Health in Industry. Canad. J. Pub. Health 48, 3:101 (Mar.), 1957.

Dirty Linen Exported—At the "Battle of Hastings" (eye-catching title, isn't it?) a whole flood of our prefabricated and preheated misinformation about the imagined dangers of fluoridation was widely circulated by obscure, fly-by-night native organizations in an attempt to undo the good work of a New Zealand community. "The evil that men do lives after them,"

and now-a-days is widely disseminated, too. Incidentally who, do you suppose, pays the bills for this expensive world-wide propaganda?

TAYLOR, D. Fluoridation: The Battle of Hastings. Health Ed. J. 15, 1:27 (Mar.), 1957.

Childhood TB—At home, tuberculin patch-testing by the mothers of small children (every three months) is suggested as a safe and reliable measure for the early detection of tuberculosis. Presumably this is proposed for high-incidence areas.

VOLLMER, H. Tuberculin Testing of Children by the Mother as a Step to Tuberculosis Control. Am. J. Dis. Child. 93, 4:396 (Apr.), 1957.

If additional information is desired regarding the articles listed in this Bibliography, please communicate directly with the publication in which they appeared; the addresses are furnished for your convenience.

Am. J. Dis. Child. (American Journal of Diseases of Children). American Medical Association, 535 N. Dearborn St., Chicago 10, Ill.

Canad. J. Pub. Health (Canadian Journal of Public Health), 150 College St., Toronto 5, Ont. Canada.

Health Ed. J. (Health Education Journal), Tavistock House, Tavistock Sq., London W.C. 1, England.

J.A.M.A. (Journal of the American Medical Association), 535 N. Dearborn St., Chicago 10, Ill.

J. Am. Water Works A. (Journal of the American Water Works Association), 2 Park Ave., New York 16, N. Y.

M. Officer (Medical Officer), Whitefriars House, 72–78 Fleet St., London E.C. 4, England.

New Yorker (New Yorker Magazine), 25 West 43rd Street, New York, N. Y.

Nursing Outlook, American Journal of Nursing Company, 2 Park Ave., New York 16, N. Y.

Sight-Saving Rev. (Sight-Saving Review), National Society for the Prevention of Blindness, 1790 Broadway, New York 19, N. Y.

Statist. Bull. Metrop. Life Insur. Co. (Statistical Bulletin Metropolitan Life Insurance Company), One Madison Avenue, New York 10, N. Y.

Association News

EIGHTY-FIFTH ANNUAL MEETING
AMERICAN PUBLIC HEALTH ASSOCIATION
CLEVELAND, OHIO — NOVEMBER 11–15, 1957

Hotel Reservation Form Appears in April and May Issues

1957 GOVERNING COUNCIL NOMINATIONS

The Nominating Committee for Elective Councilors has completed its assignment for this year by submitting the following names as its selections of Governing Council nominees for 1957.

Section 1 of Article VIII of the Association By-Laws provides that the Nominating Committee, consisting of one representative elected by each Section and a chairman appointed by the Executive Board, shall "present to the Administrative Office not less than six months before the Annual Meeting the names of the Fellows selected as nominees for the Governing Council. The number of nominees shall be not less than two nor more than three times the number of vacancies which will exist at the adjournment sine die of the Governing Council at the next Annual Meeting." Section 2 calls for publication of the nominees selected by the Nominating Committee not less than five months before the Annual Meeting.

Gaylord W. Anderson, M.D., M.P.H.
University of Minnesota
Minneapolis, Minn.

Rodney R. Beard, M.D., M.P.H.
Stanford University
San Francisco, Calif.

Jessie M. Bierman, M.D.
University of California
Berkeley, Calif.

Leroy E. Burney, M.D., M.P.H.
U. S. Public Health Service
Washington, D. C.

Paul B. Cornely, M.D., M.P.H.
Howard University
Washington, D. C.

C. Howe Eller, M.D., Dr.P.H.
University of Louisville
Louisville, Ky.

Agnes Fuller, R.N.
U. S. Children's Bureau
New York, N. Y.

J. Thomas Fulton, D.D.S.
U. S. Children's Bureau
Washington, D. C.

Albert V. Hardy, M.D., M.P.H.
State Board of Health
Jacksonville, Fla.

Fraser Harris
Dominion Bureau of Statistics
Ottawa, Ont., Canada

Herman E. Hilleboe, M.D., M.P.H.
State Department of Health
Albany, N. Y.

William G. Hollister, M.D.
National Institute of Mental Health
Bethesda, Md.

Earl L. Koos, Ph.D.
Florida State University
Tallahassee, Fla.

Sol S. Lifson, M.P.H.
National Tuberculosis Association
New York, N. Y.

Walter S. Mangold
University of California
Berkeley, Calif.

Edward G. McGavran, M.D., M.P.H.
University of North Carolina
Chapel Hill, N. C.

Edward Press, M.D., M.P.H.
American Public Health Association
New York, N. Y.

Edith P. Sappington, M.D., Dr.P.H.
U. S. Children's Bureau
San Francisco, Calif.

Philip E. Sartwell, M.D., M.P.H.
Johns Hopkins University
Baltimore, Md.

Margaret F. Shackelford, M.S.
State Health Department
Oklahoma City, Okla.

Ruth E. Simonson, R.N., M.P.H.
National Institute of Mental Health
New York, N. Y.

Helen Stacey, M.A.
U. S. Children's Bureau
Washington, D. C.

James H. Steele, D.V.M., M.P.H.
Communicable Disease Center
Atlanta, Ga.

Alan T. Treloar, Ph.D.
American Hospital Association
Chicago, Ill.

Clair E. Turner, Dr.P.H., D.Sc.
National Foundation for Infantile Paralysis
New York, N. Y.

Catherine E. Vavra, R.N., M.P.H.
University of Washington
Seattle, Wash.

Patricia Walsh, R.N., M.A.
University of Michigan
Ann Arbor, Mich.

James Watt, M.D., Dr.P.H.
National Heart Institute
Bethesda, Md.

George M. Wheatley, M.D., M.P.H.
Metropolitan Life Insurance Company
New York, N. Y.

Alberta B. Wilson, R.N., M.S.
State Department of Health
Minneapolis, Minn.

Samuel M. Wishik, M.D., M.P.H.
University of Pittsburgh
Pittsburgh, Pa.

Jacob Yerushalmy, Ph.D.
University of California
Berkeley, Calif.

Fellows and Members of the Association are reminded that Section 3 of By-Law Article VIII states that "upon the petition of twenty-five Fellows or Members, the Nominating Committee shall add the name of any Fellow to the nominees selected by it, provided such petition is received not less than three months before the Annual Meeting." The closing date for the receipt of such petitions in the Administrative Office will be August 11, 1957.

The list of Governing Council nominees shown above, plus any that may be added by petition, will be carried on the official ballot that will be mailed after August 11 to all Fellows and Members in good standing. There will be 16 vacancies on the Governing Council to be filled.

The members of the 1957 Nominating Committee for Elective Councilors are: Chairman, and also representing the Unaffiliated Section, George A. Silver, M.D.; representing the Dental Health Section, Thomas L. Hagan, D.D.S.; for the Engineering and Sanitation Section, Earle W. Sudderth; William C. Reeves, Ph.D., for Epidemiology; representing the Food and Nutrition Section, Mrs. Alice H. Smith; representing the Health Officers, Archibald S. Dean, M.D.; for the Laboratory Section, J. V. Irons, Sc.D.; Edward Davens, M.D., representing the Maternal and Child Health Section; for the Medical Care Section, Michael M. Davis, Ph.D.; representing the Mental Health Section, Elias J. Marsh, M.D.; Heinrich Brieger, M.D., for the Occupational Health Section; representing Public Health Education, Charlotte V. Leach; for Public Health Nursing, Mrs. Alice K. deBenneville; for the School Health Section, Franklin M. Foote, M.D.; and representing the Statistics Section, Paul W. Shipley.

PROPOSED AMENDMENTS TO THE CONSTITUTION

AMERICAN PUBLIC HEALTH ASSOCIATION, Inc.

The Committee on Constitution and By-Laws presents herewith for the information of the Fellows and Members certain proposed amendments to the Constitution. All the proposed changes derive from Governing Council directives as a result of the adoption of the report of the Task Force on November 13, 1956. (The full report of the Task Force was published in the February, 1957, issue of the Journal.)

The proposed changes may be summarized as follows:

1. The establishment of a new class of constituents to be known as Agency Members.
2. Assignment to the Executive Board of the duty of electing Agency Members.
3. Giving ex officio membership on the Governing Council to the Chairman of the Technical Development Board and otherwise requiring the members of this new Board to meet the conditions prescribed by the Constitution for the members of the Standing Committees.

The proposed amendments were submitted to the members of the Governing Council at a meeting on November 13, 1956, and were overwhelmingly approved.

The portions of the Constitution which it is proposed to amend are printed below. Proposed additions are in bold face type; proposed deletions in brackets.

The proposed amendments will become effective upon an affirmative vote on two-thirds of the ballots cast by the Fellows and Members in a mail vote, after canvass by the Tellers and report to the Governing Council. The official ballot will be mailed in August to all Fellows and Members in good standing.

REGINALD M. ATWATER, M.D.
Executive Secretary

Amendments to the Constitution Proposed for Adoption

Material proposed for deletion is in brackets.
Material proposed for addition is in bold face.

ARTICLE III MEMBERSHIP

Section 1. There shall be **nine** [eight] classes of constituents to be designated as Fellows, Honorary Fellows, Members, Sustaining Members, Life Members, Student Members, **Agency Members,** Affiliated Societies, and Regional Branches.

Section 2. The right to hold office, except the office of Vice-President, or to serve as a member of the Governing Council, the Executive Board, or of a Section Council, or of a Standing Committee, **or of the Technical Development Board,** or as the Chairman of a Committee of the Association or of a Section shall be limited to Fellows and to Life Members and Honorary Fellows who have been elected Fellows.

ARTICLE IV GOVERNING COUNCIL COMPOSITION

Section 1 (e). Delete the sentence reading as follows, since it has served its purpose: [At the election following the adoption of this amendment, three Councilors shall be elected to serve for one year, three for two years, and the remainder required to establish the proportion as 1:2 for three years.]

Section 1 (f). The Chairmen of the Standing Committees of the Association **and the Chairman of the Technical Development Board,** ex officio.

ARTICLE VII EXECUTIVE BOARD

Section 2. Acceptance of membership on the Executive Board shall terminate any appointment such Fellow may hold on any of the Standing Committees of the Association, **or on the Technical Development Board.**

Section 3. It shall be the duty of the Executive Board to direct the administrative work of the Association; to act as the Trustee of the Association's properties; to elect **Agency Members and** Sustaining Members; and in general to carry out the policies of the Governing Council between meetings of the latter.

News of Affiliated Societies and Branches

Illinois Looks at New Developments

The 17th annual meeting of the Illinois Public Health Association, with several hundred in attendance, was held in Chicago, April 24 and 25. The emphasis of the program was on recent developments in the public health field. For example, O. K. Sagen, Ph.D., formerly the Illinois Department's chief of statistics and now chief of special studies in the new national health survey, led a discussion of the survey in two separate sessions.

Other subjects dealt with trends in discharge care of the mentally ill patient, and public health nurse participation in new patterns of mentally ill care, newer information about viruses, newer developments in food preservation, the air pollution problem, public health education problems as related to atomic energy and civil defense. Herman Hilleboe, M.D., health commissioner of New York State, spoke at the opening general session on Some Epidemiological Aspects of Coronary Artery Disease.

George F. Forster, Ph.D., assistant deputy director of laboratories of the State Health Department, was the retiring president, having succeeded Dr. Sagen when the latter accepted his Washington post. Newly elected officers, each of whom is a member or Fellow of the APHA, are:

President: John Egdorf, executive secretary, Tuberculosis Institute of Chicago and Cook County
President-Elect: Louis Pickles, sanitary engineer, Peoria Health Department
Secretary-Treasurer: William J. Hixon, health educator, Evanston Health Department

South Dakota Legislation Summary

It will be remembered that the South Dakota Public Health Association has developed a pattern of meeting jointly in annual meeting with the South Dakota Social Welfare Conference. The 1956 meeting provided for a joint legislative representative. The fruit of this planning is now evident in a three-page report on Social Welfare Legislative Information. Here are summarized appropriations and bills passed during the 1957 legislative session that affect health and welfare activities in the state.

Among the bills relating to public health was one that failed to pass transferring inspection and licensing of eating and lodging places from the Department of Agriculture to the Department of Health. Authorization to adopt regulations for protection of the public against radiation hazards was given to the health department, which, however, was denied the authority to control air pollution. First-class cities were authorized to establish and support programs of safety and accident prevention. A bill to provide funds for scholarship loans for graduate nurse training and scholarship for practical nurse training failed to pass.

The report includes the state budget for the Departments of Public Health, Public Welfare, and Public Instruction, for state institutions, service to the blind, and Indian Affairs Commission scholarships. The health appropriation was increased by 24 per cent over the current year and has a new item providing for a mobile x-ray unit.

A New Mexico Affiliate Newsletter

The April issue of "This Is the News" reported briefly on newsletters or other publications of APHA affiliates. Since that time New Mexico has reported a newsletter—mimeographed of from two to eight pages—beginning in January,

1957. Its purpose as described in the first issue is to keep the members, prospective members, and friends of the New Mexico Association informed about the work, goals, and forthcoming events of the Association, bringing national, state, and local public health matters to their attention, and serving as the medium for the exchange of ideas.

A feature of the newsletter is a legislative summary. In fact, the four issues published through March 1, except the initial issue, are each devoted exclusively to a legislative summary, giving recommendations of the Association's legislative committee on the proposed bills that are summarized.

APHA AFFILIATED SOCIETIES AND BRANCHES

Society and Secretary

ARIZONA PUBLIC HEALTH ASSOCIATION, Goldie Gold, State Dept. of Health, Phoenix
ARKANSAS PUBLIC HEALTH ASSOCIATION, Mrs. Virginia M. Erwin, State Health Dept. Bldg., Little Rock
CALIFORNIA, NORTHERN, PUBLIC HEALTH ASSOCIATION, Alice Yeagle, Alameda County Health Dept., 15000 Foothill Blvd., San Leandro
CALIFORNIA, SOUTHERN, PUBLIC HEALTH ASSOCIATION, Byron O. Mork, M.D., University of California at Los Angeles, Los Angeles
COLORADO PUBLIC HEALTH ASSOCIATION, Margaret D. Lewis, 659 Cherokee St., Denver
CONNECTICUT PUBLIC HEALTH ASSOCIATION, Mrs. Claire Reinhardt, 310 Cedar St., New Haven
CUBAN PUBLIC HEALTH SOCIETY, Dr. Raphael Calvo Fonseca, San Rafael 1170, Havana
FLORIDA PUBLIC HEALTH ASSOCIATION, Nathan J. Schneider, Ph.D., P. O. Box 210, Jacksonville
GEORGIA PUBLIC HEALTH ASSOCIATION, J. F. Hackney, M.D., 224 Central Ave., S.W., Atlanta
IDAHO PUBLIC HEALTH ASSOCIATION, Mrs. D. W. McDougal, P. O. Box 563, Boise
ILLINOIS PUBLIC HEALTH ASSOCIATION, William J. Hixon, Evanston Health Dept., Evanston
INDIANA PUBLIC HEALTH ASSOCIATION, Hester Beth Bland, 1330 W. Michigan St., Indianapolis
IOWA PUBLIC HEALTH ASSOCIATION, Mary L. Wombacher, State Dept. of Health, Des Moines
KANSAS PUBLIC HEALTH ASSOCIATION, Evelyn Ford, State Board of Health, State Capitol, Topeka
LOUISIANA PUBLIC HEALTH ASSOCIATION, Mrs. Velma Brusse, Dept. of Health, New Orleans
MASSACHUSETTS PUBLIC HEALTH ASSOCIATION, Muriel Bliss Wilbur, 695 Huntington Ave., Boston
MICHIGAN PUBLIC HEALTH ASSOCIATION, Maurice J. Mayer, 405 Hollister Bldg., Lansing
MINNESOTA PUBLIC HEALTH CONFERENCE, D. S. Fleming, M.D., State Dept. of Health, University Campus, Minneapolis
MISSISSIPPI PUBLIC HEALTH ASSOCIATION, H. E. Boone, P. O. Box 1700, Jackson
MISSOURI PUBLIC HEALTH ASSOCIATION, Mrs. Nadia Craver, 5th Fl., State Office Bldg., Jefferson City
MONTANA PUBLIC HEALTH ASSOCIATION, Emma Wright, Box 811, Harve
NEBRASKA PUBLIC HEALTH ASSOCIATION, Matilda McIntire, M.D., Omaha-Douglas County Health Dept., Omaha
NEW MEXICO PUBLIC HEALTH ASSOCIATION, Robert Howell, 305 Terrace Ave., N. E., Albuquerque
NEW YORK CITY, PUBLIC HEALTH ASSOCIATION OF, Joseph Kadish, 164 W. 174th St.
NEW YORK STATE PUBLIC HEALTH ASSOCIATION, Mary C. Egan, New York State Department of Health, Albany, N. Y.
NORTH CAROLINA PUBLIC HEALTH ASSOCIATION, Mrs. Betty E. Briggs, State Board of Health, Raleigh
NORTH DAKOTA PUBLIC HEALTH ASSOCIATION, Jean E. Norton, R.N., Box 133, Bismarck
OHIO PUBLIC HEALTH ASSOCIATION, Virginia Jones, Ohio Dept. of Health, Dayton
OKLAHOMA PUBLIC HEALTH ASSOCIATION, Marjorie Butler, 3400 North Eastern, Oklahoma City
OREGON PUBLIC HEALTH ASSOCIATION, Barbara Kahn, State Board of Health, Portland
PENNSYLVANIA PUBLIC HEALTH ASSOCIATION, Robert H. Conn, 303 N. Second St., Harrisburg
PUERTO RICO PUBLIC HEALTH ASSOCIATION, Nilda Torres, Apartado 211, San Juan 2
SOUTH CAROLINA PUBLIC HEALTH ASSOCIATION, Mrs. Carrie B. Du Priest, State Board of Health, Columbia
SOUTH DAKOTA PUBLIC HEALTH ASSOCIATION, Louis E. Remily, State Dept. of Health, Pierre
TENNESSEE PUBLIC HEALTH ASSOCIATION, C. B. Tucker, M.D., State Dept. of Health, 420 Sixth Ave., N., Nashville
TEXAS PUBLIC HEALTH ASSOCIATION, H. E. Drumwright, City Health Dept., Dallas
UTAH PUBLIC HEALTH ASSOCIATION, Bertha Pedersen, State Dept. of Health, 45 Fort Douglas Blvd., Salt Lake City
VIRGINIA PUBLIC HEALTH ASSOCIATION, Nancy E. Lutz, 113 S. Third St., Richmond
WASHINGTON STATE PUBLIC HEALTH ASSOCIATION, Kathleen Burwell, R.N., State Dept. of Health, Smith Tower, Seattle
WEST VIRGINIA PUBLIC HEALTH ASSOCIATION, Harry M. Huff, State Dept. of Health, Charleston
WISCONSIN ASSOCIATION FOR PUBLIC HEALTH, Paul Weis, 1 W. Wilson St., Madison
SOUTHERN BRANCH, A.P.H.A., Joseph M. Bistowish, M.D., P. O. Box 1117, Tallahassee, Fla
WESTERN BRANCH, A.P.H.A., Mrs. L. Amy Darter, State Dept. of Health, 2151 Berkeley Way, Berkeley, Calif.

APHA membership application blank on page XXVII

Employment Service

The following pages present information for those seeking public health personnel and for those seeking positions in public health. Other information concerning vacancies and personnel available is on file in the Association office. Anyone wishing to have the benefit of this additional information can obtain it by writing to the Vocational Counseling and Placement Service of the Association.

Advertising space in these pages is available at special rates for the use of employers or individuals. The charges are $5 for the first 50 words or fraction thereof and $1 for each additional 10 words or fraction thereof. There is no charge to members or Fellows of the Association who desire to utilize the **Positions Wanted** portion of these pages. **Closing date** for receipt of advertisements is the first of the month preceding the desired month of publication.

POSITIONS AVAILABLE

Wanted—**Physician**—with administrative and public health, pediatric, or obstetrical background to direct Section of Maternal and Child Health and Crippled Children's Services. Six weeks' vacation. Merit system appointment. Starting salary $13,230 with annual increases. Dr. Charles Hayman, Commissioner, Alaska Department of Health, Juneau, Alaska.

Psychiatrist — Requires medical degree with specialty in psychiatry. Salary $11,772–$13,537. Position with State Health Department, Denver, Colo. Write to Dalton Roberts, Chief, Administrative Services, Colorado State Department of Public Health, 420 State Office Bldg., Denver 2, Colo.

Clinical Psychologist—Requires Ph.D. degree in clinical psychology and three years' clinical experience. Salary $589–$779. Position with State Health Department, Denver, Colo. Write to Dalton Roberts, Chief, Administrative Services, Colorado State Department of Public Health, 420 State Office Bldg., Denver 2, Colo.

Psychiatric Social Worker—Requires master's degree with psychiatric sequence. Salary $442–$572. Position with State Health Department. Write to Dalton Roberts, Chief, Administrative Services, Colorado State Department of Public Health, 420 State Office Bldg., Denver 2, Colo.

Deputy Director of Health—as assistant to health director responsible for medical services in a municipality of approximately 190,000 population in a suburban area of 325,000. Department employs four full-time physicians, one full-time public health dentist, several part-time physicians and dentists to man clinics. Health department adjacent to city hospital. Position under civil service. Requirements: graduate training in public health and practice of medicine and surgery. Salary range $10,400–$12,636 per year.

Medical Social Work Adviser—Open to female citizens of the United States who possess the minimum qualifications. Salary range $5,096–$6,136 per annum.

Medical Technologist I—Open to citizens of the United States who possess the minimum qualifications. Salary range $3,588–$4,264 per annum.

Public Health Nurse—Open to female citizens of the United States who possess the minimum qualifications. Salary range $3,900–$4,680 per annum.

Complete details on above may be secured by writing to Dr. Alfred L. Burgdorf, 56 Coventry St., Hartford, Conn., or Personnel Director, Municipal Building, Hartford, Conn.

Assistant Superintendent of Hospitals and Institutions—Open to male citizens of the United States who possess the minimum qualifications. Salary range $5,876–$7,072 per annum.

Nurse Anesthetist—Open to citizens of the United States who possess the minimum qualifications. Salary range $3,900–$4,680 per annum.

Complete details may be secured by writing to Personnel Director, Municipal Building, Hartford, Conn.

State positions in Illinois: **Assistant Director of Local Health Services**—Location Springfield. **Regional Health Officer**—Location Carbondale, home of Southern Illinois University. Salary, both positions, approximately $10,000, with plan for increase expected. State retirement plan. Civil service.

Local health departments in Illinois: **Health Officer**—New county health department on Lake Michigan. Large county, unusual opportunity, very best leadership sought, salary appropriate, available July or after. **Health Officer**—Single county, 65,000 population, excellent staff, salary to be arranged. **Health Officer**—Multiple-county unit on Ohio River, population 35,000, salary $9,000–$10,000. **Health Officer**—for each of two local health districts. Competitive examination will be held in summer. Champaign-Urbana Health District, serving university

cities Champaign and Urbana, population 75,000, salary range $12,000–$15,000; East Side Health District, East St. Louis, population 115,000, staff of 50, salary approximately $12,000. Retirement.

Residencies in Public Health: Three residency areas available to interested physicians—Cook County, Will County, Peoria City and County; approved for two-year residencies. Stipend $5,000–$6,000. Begin first of any month.

Additional information on above positions available from Illinois Department of Public Health, 505 State Office Bldg., Springfield, Ill.

Deputy County Health Officer—for a well organized county health department. Adequate salary and generous fringe benefits. Give references and details as to previous training in first letter. Address **Box PH-71,** Employment Service, APHA, 1790 Broadway, New York 19, N. Y.

Health Director—for growing county of 65,000, located adjacent to Kansas City, Mo. Modern health center recently completed. Three-year-old department with excellent opportunity for program development. Public health degree with some experience required. Commencing salary $12,000. Edward H. Fischer, M.D., Clay County Health Department, Liberty, Mo.

Public Health Physician—for Director of Butler County Health Department, Butler, Pa., (population 103,000). Permanently established department which has just received overwhelming vote of confidence of three and one-half to one in county-wide referendum. Well qualified staff includes a public health engineer, public health nurses, public health educator, and sanitarians. Three-year-old department with excellent opportunity for program development. Opportunity for association with the Graduate School of Public Health, University of Pittsburgh, for qualified man. Excellent personnel policies, unsurpassed retirement plan, fine educational, cultural, and recreational facilities. Starting salary $12,500–$14,500, depending on qualifications. Address inquiries to Edward C. Lutton, M.D., Chairman, Butler County Board of Health, 426 N. Main St., Butler, Pa.

Physician—to serve with department of health clinical team working with children having a variety of crippling conditions. Will have professional and administrative responsibility for operation of specified areas of crippled children services. Requires completion of general internship in approved hospital and not less than two years' employment in pediatrics or completion of two-year internship in pediatrics and M.P.H. Also eligibility for license to practice medicine and surgery in Connecticut. Merit system, sick leave, annual vacation. Reply to Glendon A. Scoboria, State Personnel Director, State Office Building, Hartford, Conn.

Physician—In state department of health to be in charge of the project for the early care, health planning, and correlation of services to illegitimately pregnant mothers and babies born out of wedlock. Requires completion of general internship in approved hospital and not less than two years' employment in practice of pediatrics or obstetrics, or completion of two years' internship in pediatrics or obstetrics in approved hospital and M.P.H. Also, eligibility for license to practice medicine and surgery in Connecticut. Reply to Glendon A. Scoboria, State Personnel Director, State Office Building, Hartford, Conn.

Laboratory Director—Washington State Health Department. Director needed to supervise State Health Department laboratory comprised of six units and 23 workers. M.D. degree or Ph.D., Sc.D., or related degree plus eight years of experience, including six years of postdoctoral supervisory experience in the laboratory field. Salary $9,984–$11,916 per annum. Write Dr. Bernard Bucove, State Director of Health, 1412 Smith Tower, Seattle, Wash.

Director of Epidemiological Services—Washington State Health Department. Epidemiologist needed to direct state-wide epidemiological services. M.D., M.P.H. degrees plus three years of experience and eligibility for a license in Washington. Salary $10,908–$13,020 per annum. Write Dr. Bernard Bucove, State Director of Health, 1412 Smith Tower, Seattle, Wash.

Public Health Nurse Consultant—Washington State Health Department. Nursing consultant for a State Health Department needed. Bachelor's degree, including or supplemented by public health nurse training and three years of experience, including at least one year in supervisory public health nursing work. Preference will be given to applicants with rehabilitation nursing experience. Salary $5,184–$6,168 per annum. Write Dr. Bernard Bucove, State Director of Health, 1412 Smith Tower, Seattle, Wash.

Senior Public Health Nurse—Openings for **Senior Public Health Nurses I and II** in generalized programs in town and rural areas. Travel expenses paid from Seattle. Thirty-eight-hour work week, Blue Cross, liberal annual and sick leave. Minimum qualifications: approved program of study for first level public health nursing and two years' generalized PHN experience, one of which was under supervision. Salary: starts at $5,400 and $5,580 to $6,420 and $6,600 per annum, depending on area to which assigned. Automatic increases at six months and annually thereafter. Applications obtainable from Helen Hartigan, Chief, Section of Nursing, Alaska Department of Health, Juneau, Alaska.

Chief of Division of Public Health Nursing—City of Berkeley Department of Public Health. Combined generalized program, including community public health nursing services, V.N.A., and public and private school nursing services. Requirements include M.P.H. or equivalent, six years' experience in public health nursing of which two years must have been in generalized program; four years' experience in supervision; ability to acquire California licensure in nursing. Salary $519–$632 per month. Up to one-half of travel expenses within radius of 2,500 miles will be paid to 10 highest candidates on final eligible list to come to Berkeley for oral exams. Applications accepted up to July 15th. Written examinations will be given about two weeks later at various points in the U. S. Apply to Director of Personnel, Room 19, City Hall, Berkeley, Calif.

Qualified Public Health Nurse—Must be eligible for California certificate. Salary $376–$458; travel allowance for use of private car. Write to San Benito County Health Department, Health Center Bldg., Hollister, Calif.

Public Health Nurse—Generalized public health program, Napa County, 50 miles from San Francisco. Salary range $341–$415; liberal benefits; starting salary dependent on training and experience. Automobile required; car allowance. For job description and application contact Sterling S. Cook, M.D., Director of Public Health, P. O. Box 749, Napa, Calif.

Supervisory and staff positions for **Public Health Nurses,** Santa Barbara County, Calif. Staff salary range $355–$433; supervisor's $392–$478. Generalized program, including schools. Contact Petronilla Commins, Director, Public Health Nursing, Santa Barbara County Health Department, Santa Barbara, Calif.

Public Health Nursing Director—Position open September, 1957. Supervising experience and B.S. in public health nursing required. M.P.H. desirable. Staff of 10 public health nurses doing strictly public health nursing in very desirable location in well established department with complete public health program, in fine modern building. Salary $5,100. Write J. H. White, M.D., Director, Weld County Health Department, Box 521, Greeley, Colo.

Public Health Nursing Supervisor—with a degree in an N.L.N. approved school for public health nursing, for a visiting nurse agency in a university city. Liberal policies and benefits. Salary open. Contact Mrs. Louise Grizzard, Executive Director, Visiting Nurse Association, 424 W. Jefferson St., Louisville 2, Ky.

Public Health Nurses (2)—Generalized public health nursing program in rural county. Resort section of southwestern Michigan with 55,400 population. Liberal personnel policies and training center. Salary scale $3,500–$4,200 with regular annual increases. Starting salary dependent upon qualifications. Write A. B. Mitchell, M.D., Director, Allegan County Health Department, Allegan, Mich.

Public Health Nursing Positions—Available in combination health department and visiting nurse service. Public health nursing preparation required. Generalized service. Agency in a university community. Beginning salary $3,996, yearly increments. Social Security. Please write: Miss Patricia Walsh, Nursing Director, Washtenaw County Health Department, County Building, Ann Arbor, Mich.

Applications will be received by the undersigned at his office, Room 202, City Hall, Allentown, Pa., for the position of full-time **Health Officer** of the City of Allentown, Pa., up to July 1, 1957. Applicants must be a licensed medical doctor of the State of Pennsylvania or eligible to be licensed as a medical doctor in the State of Pennsylvania. Applicants shall state in writing their qualifications as well as salary desired. For any information desired, contact the undersigned, George W. Kistler, City Clerk and Secretary, Board of Health, Allentown, Pa.; Phone HE 4-9601.

Public Health Nursing Positions—Available in Health Department with the city of Flint, a rapidly growing city of 180,000 population. Beginning, intermediate, and administrative positions are available. Five-day, 40-hour week, with liberal retirement, vacation, and sick leave policies. Car furnished. Beginning salary rates: $3,952, $4,329, or $4,654, depending on experience and qualifications. Automatic increases and longevity rates for length of service. Apply Flint Civil Service Commission, City Hall, Flint, Mich.

School Nurse—Will accept qualifications of one-year supplemental accredited courses in public health nursing, but prefer B.S. degree in nursing, with preparation for staff level public health nursing. Beginning salary $4,100–$4,850, maximum $5,750. Staff of 12 nurses, term 10 months. Apply to Miss Genevieve Arensdorf, Supervisor of Nurses, Clark County School District, P. O. Box 551, Las Vegas, Nev.

Public Health Bacteriologist—One-person laboratory with assistant. Eligible for California certificate. Salary open. **Public Health Nurse**—Generalized program county of 50,000, six staff nurses. Eligible for P.H.N. and R.N. certification in California. Starting salary commensurate with qualifications. Range $359–$411. Eleven paid holidays, 15 days' vacation, sick leave, retirement, insurance, county car furnished. For information

write to Kings County Health Department, Hanford, Calif.

Public Health Engineer—To head environmental sanitation program in a community exceeding 100,000. Will require civil engineer with graduate degree in public health engineering. Starting salary $575–$645, depending upon experience and qualifications. Car furnished. Pueblo City-County Health Department, Pueblo, Colo.

Sanitary Inspector—for generalized sanitation program in western New York county health department. Excellent staff, retirement program, liberal vacation, car provided for official use. Graduation from high school, including courses in general science, mathematics, and chemistry and two years of satisfactory sanitary inspection experience required. Salary $3,073.20–$3,586.80. Write Sanitary Engineer, Box 573, Olean, N. Y.

Health Education Specialist (School Health Consultant)—Plan and develop state-wide school health program; provide consultation and advisory service to school and public health personnel; participate in inservice training of professional groups and assist school administrators with teacher training; coordinate department program with other state and voluntary agencies. One year graduate study public health; three years' experience in education, public relations or public health; teaching experience. Salary $5,640–$6,660. Travel allowance; vacation, sick leave, Social Security, retirement. Dr. Amy L. Hunter, State Board of Health, Madison, Wis.

Health Officer—for Trenton, N. J., full time; must be a physician duly licensed by the State Board of Medical Examiners of the State of New Jersey; public health training or experience desired; salary range $11,400–$12,800. For further information, write to Director of Public Affairs, City Hall, Trenton, N. J.

Director, Diagnostic and Research Tuberculosis Laboratory—Central Florida; physician or nonphysician microbiologist or clinical chemist. Part-time employment will be considered. Write Dr. Albert V. Hardy, Director, Bureau of Laboratories, State Board of Health, P. O. Box 210, Jacksonville, Fla.

Beginning immediately—**Health Educator**—for experimental demonstration program in industrial health education, sponsored jointly by the Harvard School of Public Health and Cambridge Health Department. First year salary of $5,000, plus other perquisites. Requires M.P.H. in public health education. Apply to Dr. M. A. C. Young, Harvard School of Public Health, 55 Shattuck St., Boston 15, Mass.

International Vacancies

Public Health Sanitarians—There are several positions open in Latin America and the Caribbean area for public health sanitarians in rural public health and malaria/Aedes aegypti mosquito eradication programs. Essential qualifications are formal public health training and some experience in the above-mentioned fields. Spanish is desirable in nearly all positions and essential in some. Salaries range from $3,600 to $4,800 per annum, plus income tax reimbursement and liberal overseas and family allowances. For further details contact Personnel Office, PASB/WHO, 1501 New Hampshire Ave., N.W., Washington 6, D. C.

POSITIONS WANTED

On box numbers, address American Public Health Association at 1790 Broadway, New York 19, N. Y.

B.S., M.P.H., Dr.P.H.—Broad academic training in public health disciplines with special emphasis in hospital administration and epidemiology. Good teaching experience in anatomy, biostatistics, epidemiology, and hospital administration. Voluntary agency experience and official agency training. Seeks position in hospital administration, epidemiology, health planning, or programing Young (35), veteran, travel O.K. Write **Box C-34,** Employment Service, APHA.

Sanitary Engineer—M.S.; 15 years' diversified experience in public health engineering, air pollution, and administration of government research; age 38, married, family. Write **Box E-35,** Employment Service, APHA.

Canadian Certified Specialist in Public Health—Six years' experience in administration, teaching, and practice of public health, especially epidemiology and maternal child care. Write **Box PH-72,** Employment Service, APHA.

Commercial Advertisements

All communications on the following commercial advertisements should be sent to Burneice Larson, Medical Bureau, Suite 605, 900 North Michigan Avenue, Chicago 11, Ill.

OPPORTUNITIES AVAILABLE

(a) Health commissioner, county health department; full-time, cooperating unit; near university center, Midwest; $15,000. (b) Assistant county health physician; well organized department; excellent hunting and fishing area, Northern California. (c) Epidemiologist; preventive medicine staff, foreign operations, leading industrial company; $14,000 plus $4,000 family maintenance; federal tax free. (d) Student health physician to direct department; 6,000 students; South. (e) Associate director; state university; 3,800 students; Northwest; minimum $9,000. (f) Health educator qualified direct comprehensive and coordinated public health department, city and county; university city; West. (g) Sanitarian; degree in sanitary sciences, public health or engineering, three years' experience required; foreign operations, major industrial company; $10,000–$12,000. (h) Health inspector experienced meat and dairy products inspection; foreign; $700. (i) Senior and junior public health engineers; county health department; salary $6,000–$8,400 and $4,860–$6,000, respectively. (j) Assistant professor of nursing; new collegiate program; coastal city, California; $5,000–$5,500. (k) Public health nurse to assist in state program in tuberculosis control; conduct community orientation, initiate hospital admission x-ray program; $5,000, expenses. (l) School nurse; high school, college; West Coast. (m) Head, public health nursing; university hospital under American auspices; foreign assignment. (n) Public health nurses; staff positions; San Francisco area; own car, mileage paid. (o) Public health nursing coordinator; 40-man clinic, 350-bed hospital; East.

OPPORTUNITIES WANTED

WANTED—Opportunities for public health physicians, nurses, health educators, engineers, laboratory personnel. Candidates in all parts of the country, available for administrative, academic, and staff appointments. Negotiations strictly confidential.

New York's Poison Control Centers

Early in the spring a round-the-clock network of poison control and information centers was in operation in New York State. Centers in Albany, Syracuse, Rochester and Buffalo, each affiliated with a major teaching hospital, were operating under the general direction of the State Health Department. The centers maintain 24-hour emergency service to treat cases and 24-hour telephone service to answer queries from physicians on the ingredients of drugs and household supplies and to advise on latest treatment methods.

The centers cooperate with local health departments and other community agencies in poison control health education, report all cases to the state health department, particularly new types of poisoning not noted in available reference material.

A similar center operated by the New York City Health Department and serving the metropolitan area is supported in part by the State Health Department.

News from the Field

WHO News

World Health Assembly to Meet in U. S.

The U. S. State Department late in April invited WHO to hold the 1958 World Health Assembly in the United States. Although the 1956 Congress authorized the expenditure of $400,000 to plan the Assembly and meet the additional costs of meeting in this country, the Budget Bureau, at the time the invitation was issued, had not recommended the appropriation to Congress. The host city for the United States meeting has not yet been selected.

South American Regional Problems

The Rio de la Plata countries—Argentina, Brazil, Paraguay, and Uruguay—held their fourth Frontier Health Meeting in Porto Alegre, Brazil, in February under the sponsorship of the Pan American Sanitary Bureau. By a PASB Sanitary Agreement signed in 1948 the four countries recognized the need to coordinate measures in the border regions to solve common epidemiologic problems related to various diseases. Since then, in addition to the recent meeting, the group met in 1948, 1953, and 1955.

Similar border health agreements were signed by Peru, Bolivia, and Chile in 1946 and by Argentina, Bolivia, and Paraguay in 1948. The United States and Mexico have collaborated on border health problems since the days of World War II.

Europe Regional Office to Denmark

This month WHO's Regional Office for Europe is completing its removal to Copenhagen. Hitherto located in the Palais des Nations of Geneva, along with the world offices of WHO, the regional office began moving in stages in April of this year. Dr. Paul J. Van de Calseyde, a native Belgian and former Belgian director-general of health, took office as the first director of the European regional office on February 1, 1957.

Technical Report Series

The Executive Board of WHO, meeting in Geneva in January, 1957, authorized the publication in the Technical Report Series of the reports of 10 expert committees on such subjects as organization of medical care, food additives, rheumatic diseases, malaria, addiction-producing drugs, and insecticides. The last named is recommended for the widest possible distribution, the one on drugs is recommended for the attention of the UN secretary general. A report on International Quarantine was transmitted to the 10th World Health Assembly for consideration.

Fourth Winslow Memorial Lecture

"C.-E. A. Winslow: An Appreciation of a Great Statesman" was the title of the 4th annual Winslow Memorial Lecture of the Department of Public Health, Yale University, given by Reginald M. Atwater, M.D., executive secretary, American Public Health Association. Dr. Atwater reminded his audience of Professor Winslow's characteristic ability "to put his finger on newly developing areas of great significance, his perspective on human values, his strategic judgment, his faith in the democratic process, and his broad and deep education and culture. Professor Winslow was one to whom the difficulties of great tasks were only added incentives."

The lecture was given on April 26 as a part of the two-day celebration of the 40th Anniversary of the Department of

Public Health of the university. The three earlier Winslow Memorial Lecturers were Surgeon General Leonard A. Scheele, 1954; Henry Van Zile Hyde, M.D., chief, Division of International Health, Public Health Service, 1955; and Robert D. Defries, M.D., director, School of Hygiene, University of Toronto, 1956.

New Children's Bureau Chief

Katherine Brownell Oettinger, dean of the Boston University School of Social Work, is the new chief of the Children's Bureau, by appointment of President Eisenhower and confirmation by the United States Senate. She succeeds Martha M. Eliot, M.D., resigned to become professor of maternal and child health at the Harvard School of Public Health.

Mrs. Oettinger takes office as the Children's Bureau ends its 45th year, during which time it has had four chiefs—Julia Lathrop, Grace Abbott, Katherine Lenroot, and Dr. Eliot. Before heading the Boston school in 1954, Mrs. Oettinger was a division chief in the Bureau of Mental Health, Pennsylvania Department of Welfare. She is the mother of two sons and widely noted by newspapers as the first mother to be appointed head of the Bureau.

Cerebral Vascular Research Started

A research program in cerebral vascular disease over a period of years is being undertaken by the Public Health Service with the cooperation of medical research centers. Under the auspices of the National Institute of Neurological Diseases and Blindness, grants have been made to 10 universities and hospitals at the outset, with an eventual 35–40 institutions participating. In addition Institute grants support 29 current individual research projects on various aspects of the disease.

Data collected will be collated and evaluated at the University of Iowa, one of the cooperating institutions. Research results are expected to shed new light on the nature and causes of strokes and to suggest more effective methods of treatment. It is also hoped to find ways of more accurate selection of stroke patients who are most likely to benefit from surgical or nonsurgical therapies.

New State Mental Health Department

A State Department of Mental Health was created by the 1957 meeting of the West Virginia Legislature. The new department takes over the activities of the State Health Department's Bureau of Mental Health and authorizes the transfer of personnel, records, and equipment. The department will also supervise the five state mental hospitals and the training school.

According to the legislation, the director of the department must be a qualified psychiatrist with both clinical and administrative experience. He is appointed by the Governor for a five-year term at an annual salary of $20,000. An initial appropriation of $200,000 has been made for the first year's operation beginning July 1, 1957.

California Public Prenatal Care

Because mothers delivered in county hospitals too often lack prenatal care and concomitantly have higher death rates and hospitalization costs, a detailed study of public prenatal care in California has been made. The study was conducted by the State Department of Health and the California Conference of Local Health Officers over a two-year period.

As a result the two agencies, together with the State Academy of General Practice, League for Nursing, Hospital Association, Medical Association, and Osteopathic Association are now devel-

oping current standards and recommendations for prenatal care in the state. In addition the department is providing consultant teams for local agencies seeking to improve prenatal care in their communities.

Growing out of the study also was a group meeting as the State Advisory Committee on Maternal and Child Health. In addition to the organizations mentioned above representatives of the State Departments of Education, Mental Hygiene, and Social Welfare were included in this meeting. A number of specific recommendations were made, chief of which are:

1. That first attention be given to the problem of inadequate quality of care and the development of standards.
2. That state-wide written policies regarding eligibility for prenatal care and for hospitalization in complications of pregnancy be made known to agencies and professional personnel who serve families.
3. That local health departments find out the extent of and the reasons for the deficit of prenatal care as a base for planning appropriate improvement.

In carrying out these recommendations the State Health Department has the cooperation also of the Association of County Supervisors, the County Welfare Directors' Association, and the Governor's Advisory Committee on Children and Youth.

The four-page report of the study, in mimeograph form, is available from the department's Bureau of Maternal and Child Health, of which the director is Leslie Corsa, Jr., M.D., 2151 Berkeley Way, Berkeley, Calif.

The Maryland Institute of Acarology

An Institute of Acarology is being offered by the University of Maryland July 15–August 2. This program reportedly provides a unique opportunity for entomologists, parasitologists, zoologists, and advanced biology students to study the mites and ticks. The staff consists of Edward W. Baker, U. S. Department of Agriculture; Joseph H. Camin, Chicago Academy of Sciences; Russell W. Strandtmann, Texas Technological College; and George Anastos and G. W. Wharton, of the university. Further information from George Anastos, Department of Zoology, University of Maryland, College Park, Md.

Maryland Cancer Research Center

The relationship of cancer to diet and physical surroundings, particularly radiation, is being studied at a cancer research center at the Washington County (Md.) Health Department. The center was developed by the health officer, W. Ross Cameron, M.D., who served in Japan with the Public Health Service. There he started observing cancer effects growing out of the Hiroshima bombing. In Hagerstown he and his associates are pursuing a theory that cancer may be caused by everyday radiation from everyday surroundings.

Now the study is to be intensified with the help of a laboratory built by funds provided by a community leader and funeral director, Andrew K. Coffman, who has already given the county its health center. The National Cancer Institute is staffing and equipping the laboratory. Its director, J. R. Heller, M.D., said the new center "may play a key role" in discovering the cause of cancer.

Information by Telephone

The Alcoholic Rehabilitation Commission of Vermont has established a Telephone Information Service designed to get information about alcoholism facilities to problem drinkers and their families in the Burlington area. "Help is as near as your telephone" is the slogan and the help is in the form of encouragement as well as information.

Says the Commission's brochure,

"With the inauguration of the telephone recording service a new means of mass communication was uncovered. The success of the experiment has surpassed all expectations and what started as a test in Burlington now is being considered as a permanent part of the Commission's promotional program, worthy of being established on a statewide basis."

Joseph P. Verdery is executive director of the Commission, 174 Pearl St., Burlington.

Medical Faculty Awards

Lederle Medical Faculty Awards for 1957 have been granted to 13 medical school teachers and researchers. The purpose of these grants, initiated in 1954, by the American Cyanamid Company is to help assure schools and universities adequate funds to encourage medical men of stature to continue in research and teaching posts. The 13 scholars are in as many institutions in eight states and Canada. With two exceptions the grants are for three years, which is the maximum period for which grants are made. The amounts of the grants are based upon the particular situation in each university but may not exceed $10,000 per year.

State Meat Inspection Regulation

A recent amendment to the sanitary code of New York State makes it mandatory for any local meat inspection program to comply with certain standards established in the sanitary code. The amendment requires both ante- and postmortem inspections and sanitary construction and operation of facilities. Meat inspected under the program must bear a legend approved by the commissioner unless a federal stamp has already been applied. Local health departments are responsible for inspection procedure under the supervision of the State Health Department. At present only carcass meat is covered. New York City is exempted from the requirements.

In announcing the amendment, Herman E. Hilleboe, M.D., state health commissioner, explained that it seeks only to set standards for existing meat inspection programs and to eliminate economic barriers to the free flow of meat between areas maintaining approved meat inspection programs. It does not require any municipality to establish a meat inspection program but merely sets up regulations where such programs are established.

National Medical Library in Bethesda

The second meeting of the Board of Regents of the National Library of Medicine, meeting in Washington on April 29, voted to locate the new library buildings on the grounds of the National Institutes of Health in Bethesda. Thus it remains in the Washington area as an integral part of the housing of the Public Health Service facilities. There had been a determined movement to locate the library in Chicago.

Mental Health in the Western Area

To improve and expand mental health training and research in the western states is the purpose of a four-year grant by the National Institute of Mental Health to the Western Interstate Commission for Higher Education. The Commission applied for the grant in response to a request of western legislators following a survey of needs in these states.

The grant was made available beginning June 1, 1957, at which time steps were taken to create a western mental health council and to add several mental health experts to the WICHE staff.

In reporting the grant, Harold L. Enarson, Ph.D., director of WICHE,

said the money would be used to encourage closer relationships between western medical schools and state mental hospitals, to help promote interstate mental health research, and to aid in organizing state mental health training programs.

Research in a Social Work School

The New York School of Social Work of Columbia University established a Research Center in late 1956 "to undertake fundamental research into social welfare problems." The first research project undertaken and still in process is a study of rehabilitation problems of the blind.

Recently, through a grant from the Ford Foundation, the Research Center has begun a comparative study of correctional institutions for juveniles, which is expected to take three years to complete. The purpose is to study "the effects upon the behavior of juvenile offenders of certain aspects of the organization of correctional institutes." Faculty members Lloyd E. Ohlin and Richard A. Cloward are co-directors of the study. Dr. Ohlin was formerly with the Correctional System of Illinois; Mr. Cloward with that of the United States Army.

Medical Activities Advisory Council

Surgeon General Leroy E. Burney has appointed a committee of seven physicians to advise him on Public Health Service activities related to the practice of medicine. The members of this group, meeting for the first time April 4–5, include Drs. Stuart Adler of Albuquerque, N. M.; C. Byron Blaisdell, member of the Committee on Legislation, American Medical Association; Hugh Hussey, AMA trustee; W. L. Portteus, past president, Indiana Medical Association; Julian Price, AMA trustee; Stanley R. Truman, past president, American Academy of General Practice; and William B. Walsh, past president, National Medical Society.

Full-Time Executive for Sanitarians

The National Association of Sanitarians for the first time has appointed a full-time executive secretary and managing editor of The Sanitarian. Offices are at the Department of Sanitary Science, University of Denver, Colorado. Nicholas Pohlit, the new executive secretary, will take over the work done by Roscoe Davis, the former executive secretary, and by Professor Harry Bliss, former editor of The Sanitarian.

Baltimore Department Reorganized

The Baltimore Board of Estimates has approved the creation of five new assistant commissionerships for the Health Department. Ross Davies, M.D., has become chief assistant commissioner; J. Wilfred Davis, assistant commissioner for medical care; Janet Hardy, M.D., assistant commissioner for preventive medicine; Matthew L. Tayback, Sc.D., assistant commissioner for research and planning; and Wilmer L. Schulze, assistant commissioner for the sanitary section. In addition, the Bureaus of Tuberculosis, Communicable Diseases, and Venereal Diseases have been merged into a Bureau of Communicable Disease under a single administrative director.

Ciba's Medical Horizons Cited

CIBA Pharmaceutical Products, Inc., has been cited for service to the medical profession through its presentation of the national television series, "Medical Horizons," by the American Medical Association. The presentation, made by AMA president, Dwight H. Murray, M.D., was made at the annual meeting of the Association's House of Delegates

in Seattle on November 28. "Medical Horizons," now in its second year on the ABC television network, presents "live" documentary reports on the latest developments in medical science each week directly from important hospitals, clinics, and laboratories.

PERSONALS

DRS. ROBERT J. ANDERSON,† chief, Communicable Disease Center, Atlanta; ALBERT L. CHAPMAN,* chief, Division of Special Health Services, Bureau of State Services; ROBERT J. FELIX,* director, National Institute of Mental Health; J. RODERICK HELLER,* director of the National Cancer Institute; and JOHN D. PORTERFIELD,* Assistant Surgeon General in the immediate office of the Surgeon General, each with the previous rank of Medical Director, have been appointed Assistant Surgeons General, a rank equivalent to the Army's Brigadier General.

MARGARET ARNSTEIN, R.N., M.P.H.,* former chief, Division of Nursing Resources, has been promoted to chief, Office of Public Health Nursing, Public Health Service, succeeding PEARL MCIVER, R.N.,* who has become executive director, American Journal of Nursing Company, New York City, succeeding the late NELL BEEBY, R.N.†

DRS. THEODORE J. BAUER,* deputy chief, Bureau of State Services; DAVID E. PRICE,* who will fill a newly created post of deputy chief of the Bureau of Medical Services; and C. J. VAN SLYKE,† associate director, National Institutes of Health, have been advanced in rank to Assistant Surgeon General, equivalent to the Army's Major General.

R. G. BEACHLEY, M.D.,* health officer of Arlington County, Va., has been elected president of the Metropolitan Health Officers' Association, composed of public health officials of the District of Columbia and nearby Maryland and Virginia Counties.

H. W. BELL, M.D., has succeeded C. S. PALMER, M.D., as health officer of Massillon, Ohio.

MARY R. BOYD, M.D., has succeeded ROBERT CONRAD, M.D., as health commissioner of Clinton County, Wilmington, Ohio.

JOHN A. CHILDS, former senior sanitarian, Bureau of Environmental Hygiene, has been promoted to chief, Division of Rodent Control, Baltimore Health Department.

WILLIAM MANSFIELD CLARK, ScD., professor emeritus, Department of Biological Chemistry, Johns Hopkins University School of Medicine, has received the 1957 $5,000 Passano Foundation Award in recognition of his long and distinguished career as investigator and teacher, and for his demonstration over the years of the importance of physical methods notably in the control of pH and of oxidation-reduction to the study of life processes.

FRANCIS E. COLIEN, PH.D., M.S.,* formerly with the Bureau of Laboratories, Maryland State Health Department, Baltimore, has been elected a member of the Royal Health Society of Great Britain.

GUNNAR DYBWAD, PH.D.,† former director, Child Study Association of America, has been named executive director, National Association for Retarded Children, New York City.

MARJORIE EASTABROOKS, M.S.P.H.,* former supervisor of health and physical education, State Department of Public Instruction, is now health education director, King County Anti-Tuberculosis League, Seattle, Wash.

LAWRENCE M. FISHER, Sanitary Engineer Director (Ret.),* Public Health Service, and former engineering field associate, APHA, has been awarded a Life Membership Diploma by the American Society of Civil Engineers.

ARTHUR S. FLEMMING, president, Ohio Wesleyan University, is director of the two-year survey of dentistry being conducted by the American Council on Education and supported by the W. K. Kellogg Foundation and the American Dental Association.

REED GAITHER, assistant to the commissioner of health, Baltimore, has retired following 40 years of service with the City Health Department.

STEWART T. GINSBERG, M.D., former chief, Psychiatry Division, Veterans Administration, Washington, D. C., is now Indiana commissioner of mental health and professor of psychiatry, Indiana University School of Medicine.

WILBUR P. GREEN,† former senior supervisor of sanitation, Marion County (Ore.) Health Department, is now associate sanitarian, Alaska Department of Health, in Juneau.

MAURICE H. GREENHILL, M.D., former chairman, Department of Psychiatry, University of Miami School of Medicine, and director, Psychiatric Institute of Jackson Memorial Hospital in Miami, has succeeded PAUL V. LEMKAU, M.D.,* as director, New York City Community Mental Health Board.

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* Fellow.
† Member.

RENA HAIC, R.N.,* chief, Bureau of Public Health Nursing, California State Health Department, has retired and is touring Europe for four months, including attendance at the Rome meeting of the International Council of Nursing.

E. H. HARE, M.D., former administrator, Indianapolis Veterans Administration hospitals, is now acting director, Tuberculosis Control Division, Indiana State Board of Health.

GEORGE H. HAUSER, M.D.,† director, Division of Laboratories, Louisiana State Department of Health, has been elected president of the Orleans Parish Medical Society.

B. DIXON HOLLAND, M.D.,* secretary, Council on Industrial Health, American Medical Association, Chicago, Ill., has been elected a Fellow of the Industrial Medical Association.

MORRIS A. JACOBS, M.D.,† former deputy commissioner in charge of medical activities, has succeeded BASIL C. MACLEAN, M.D.,* as New York City commissioner of hospitals.

LOIS M. JUND,* former administrative director, Alaska Department of Health, is now health program representative, Public Health Service Regional Office in Dallas. She has been succeeded by DOUGLAS I. TERRY,† former registrar and biostatistician, Cleveland Health Department.

JOHN E. KASIK, M.D., senior assistant resident physician, Department of Medicine, University of Chicago, has received the James Alexander Miller Fellowship of $7,000 from the New York Tuberculosis and Health Association for research in cycloserine, a drug used in TB treatment.

NORVIN C. KIEFER, M.D., M.P.H.,* chief medical director, Equitable Life Assurance Society of the U. S., has been chosen president-elect of the National Health Council for a term of office beginning March, 1958.

JOHN MACIVER, M.D.,† former assistant, has succeeded WILLIAM J. MCCONNELL, M.D.,* retired, as director, Safety and Occupational Health Bureau, Health and Welfare Division, Metropolitan Life Insurance Company, New York City.

WILLIAM J. MCNAMARA, M.D., former associate medical director, has been named director of a newly created Bureau of Industrial Health, Medical Department, Equitable Life Assurance Society of the U. S., New York City.

SIDNEY L. MILLER, D.D.S., formerly in private practice in Westfield, N. Y., has been appointed director, Division of Dental Hygiene, Alabama State Health Department.

JOHN A. PERKINS, president, University of Delaware, has been appointed undersecretary of health, education, and welfare, succeeding HEROLD C. HUNT, PH.D., who has returned to Harvard University.

JAMES E. PETERMAN, M.D.,* former health officer, Metropolitan State Health Department, New Jersey State Health Department, Newark, has been assigned to the Division of Chronic Illness Control in Trenton. He has been succeeded by WILLIAM J. DOUGHERTY, M.D., M.P.H.,† former health officer, Central State Health District with offices in Trenton.

JOHN K. PETERSON, D.D.S.,† assistant chief, Dental Health Section, Minnesota Health Department, and his wife, ALICE PETERSON, M.D.,† in the department's Maternal and Child Health Division, have become, respectively, director, Division of Oral Hygiene, and director, Division of Maternal and Child Health, North Dakota State Department of Health.

LUCY W. PICKETT, PH.D., head of the chemistry department, Mt. Holyoke College, Mass., has received the American Chemical Society's Garvan Medal for 1957 awarded annually to an outstanding woman chemist.

O. K. SAGEN, PH.D.,* former chief, Bureau of Statistics, Illinois State Department of Public Health, is now on the staff of the new National Health Survey, Public Health Service.

HAROLD A. SCHERAGA, PH.D., associate professor of chemistry, Cornell University, has received the 1957 $1,000 Eli Lilly and Company Award in Biological Chemistry of the American Chemical Society for his work on protein chemistry and the blood clotting process.

EDWARD E. SCHWARTZ, PH.D.,* former chief, Program Analysis Branch, Children's Bureau, is now director, social service program and professor of social welfare administration, New York University's Graduate School of Public Administration and Social Service.

MYRON G. TULL, M.D.,† acting director, Bureau of Communicable Diseases, Baltimore Health Department, has retired after serving the department for over 34 years.

HUBERT J. WEGENER, D.D.S., M.P.H.,† former regional dental consultant, Georgia Department of Public Health, is now director of dental health, Omaha-Douglas County Department, Neb.

BRENT WELCH, M.D., health commissioner of the Auglaize County-Wapakoneta (Ohio) Health Department, has resigned.

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* Fellow.
† Member.

ROBERT S. WESTPHAL, M.D.,* a former health officer of Sonoma County (Calif.), and recently returned from a WHO assignment as assistant area director, Alexandria, Egypt, is now health officer, Modesto and Stanislaus County, Calif.

EVELYN ZETTER, R.N., former director of nursing, Allegheny Valley (Pa.) Hospital, is now field service consultant, Department of Hospital Nursing, National League for Nursing.

WALTER UNDERWOOD, former principal plumbing inspector, has been appointed chief, Division of Plumbing, in the Bureau of Environmental Hygiene, Baltimore Health Department, succeeding CARROLL H. REYNOLDS, retired.

DEATHS

R. A. CLANTON, M.D.,† medical director, Grenada (Miss.) County Health Department (Health Officers Section).

THORVALD MADSEN, M.D.,* bacteriologist, Copenhagen, Denmark, on April 15 at the age of 87. Dr. Madsen was an Honorary Fellow of the American Public Health Association.

GEORGE NENNER, M.D.,† district health officer, New York City Department of Health (Health Officers Section).

JAMES D. PURVIS, M.D., M.P.H.,† district medical director, Montgomery County (Pa.) (Epidemiology Section).

FRED J. WAMPLER, M.D.,* of Bridgewater, Va. on April 6 (Public Health Education Section).

CONFERENCES AND DATES

American Public Health Association, 85th Annual Meeting, Cleveland, Ohio. Headquarters: Public Auditorium, November 11–15.

State and Regional Public Health Meetings:

Arkansas Public Health Association. Marion Hotel, Little Rock, Ark. August 5–6.

New England Health Institute. University of Massachusetts, Amherst, Mass. June 13–15.

New York State Public Health Association. Albany, N. Y. June 24–27.

Pennsylvania Public Health Association. University Park, Pa. August 18–22.

West Virginia Public Health Association. Prichard Hotel, Huntington, W. Va. June 6–7.

Wisconsin Association for Public Health. Memorial Union, University of Wisconsin, Madison, Wis. June 12–13.

Meetings of Other Organizations Coming in June, July, and August:

American Congress on Maternal Care. Palmer House, Chicago, Ill. July 8–12.

American Diabetes Association. Hotel Commodore, New York, N. Y. June 1–2.

American Hearing Society. St. Louis, Mo. June 5–8.

American Home Economics Association. St. Louis, Mo. June 25–28.

American Library Association. Kansas City, Mo. June 23–29.

American Medical Association. Coliseum Building, New York, N. Y. June 3–7.

American Physical Therapy Association. Hotel Statler, Detroit, Mich. June 23–29.

American Society of Medical Technologists. Palmer House, Chicago, Ill. June 23–29.

American Veterinary Medical Association. Cleveland, Ohio. August 19–22.

International Congress on Nutrition (Fourth) Paris, France. July 24–29.

International Congress on Occupational Health (Twelfth). Helsinki, Finland. July 1–6.

International Hospital Congress (Tenth). Lisbon, Portugal. June 3–7.

International Poliomyelitis Conference (Fourth). Geneva, Switzerland. July 8–12.

International Society for the Welfare of Cripples (Seventh). London, England. July 22–26.

National Association of Sanitarians and the First Congress of the International Federation of Sanitarians Organizations. Olympic Hotel, Seattle, Wash. July 15–19.

National Medical Association. Cleveland, Ohio. August 12–15.

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* Fellow.
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Orange juice, fresh, ½ cup, Cereal, dry weight, 1 oz., with whole milk, ½ cup, and sugar, 1 tsp., Bread, white, 2 slices, with butter, 1 tsp., Milk, nonfat (skim), 1 cup, black coffee.

Nutritive Value of Basic Cereal Breakfast Pattern

Calories	502
Protein	20.5 gm.
Fat	11.6 gm.
Carbohydrate	80.7 gm.
Calcium	0.532 gm.
Iron	2.7 mg.
Vitamin A	600 I. U.
Thiamine	0.46 mg.
Riboflavin	0.80 mg.
Niacin	3.0 mg.
Ascorbic Acid	65.5 mg.
Cholesterol	32.9 mg.

Note: To further reduce fat and cholesterol use skim milk on cereal which reduces Fat Total to 7.0 gm. and Cholesterol Total to 16.8 mg. Preserves or honey as spread further reduces Fat and Cholesterol.

Bowes, A. deP., and Church, C. F.: Food Values of Portions Commonly Used. 8th ed. Philadelphia: A. deP. Bowes, 1956.
Cereal Institute, Inc.: The Nutritional Contribution of Breakfast Cereals. Chicago: Cereal Institute, Inc., 1956.
Hayes, O. B., and Rose, G. K.: Supplementary Food Composition Table. J. Am. Dietet. A. 33:26, 1957.

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